AN INVESTIGATION OF ORAL LANGUAGE RECEPTIVE VOCABULARY AND CONCEPTS ABOUT PRINT OF KINDERGARTEN CHILDREN DURING THE INITIAL AND FINAL STAGES OF THEIR DEVELOPMENTAL PROGRAM

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by

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Abstract

Print concept knowledge, as measured by Sand and Stones tests, and oral language receptive vocabulary, as measured by forms L and M of the Peabody Picture Vocabulary test (PPVT-R), of 103 kindergarten schildren were investigated in November and May. The children were interviewed individually by the investigator at both testing periods. It was hypothesized that the two major variables would show a significant positive correlation as would their gain scores. Significant correlations were found at both testing periods. The gain scores, however, were not correlated. It was concluded that knowledge of oral and printed language are interrelated in their development.

It was also hypothesized that the two major variables and their gain scores would be significantly affected by the secondary variables, school entrance age and sex. Results of F tests revealed that knowledge of print concepts was significantly affected by sex at the final testing period, with girls scoring higher. Oral language receptive vocabulary was significantly affected by school entrance age at both testing periods, with the older children scoring higher. Gain scores of the major variables were not significantly affected by sex or school entrance age. It was concluded that boys may lack valuable preschool experiences with print due to society's sex-role standards.

Results of Clay's Sand and Stones tests were analyzed in comparison with Day and Day's (1978) results of kindergarten children in Texas. Agreement was found in the developmental sequence of concept patterns. This study supported the Day and Day conclusion that success with all print concepts was not a prerequisite for reading and that many advanced print concepts could be acquired during the learning-to-read process.

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CHAPTER 1

THE PROBLEM

Introduction

Background of the Study

Much recent research in reading has focussed on children's metacognitive knowledge specific to oral language and reading. In a review of literature relevant to this topic, Moore (1982) defined metacognitive knowledge as "an individual's knowledge about various aspects of thinking" (p. 120). Previously, Flavell (1978, as cited in Winograd & Johnson, 1980, p. 3) had defined the term as "knowledge that takes as its object or regulates any aspect of any cognitive endeavor".

This attention on metacognitive knowledge is a result of a shift in emphasis from behaviorism to the study of thought, reasoning, and reflection (Kendall & Mason, 1982). Although the term is relatively new, its referent knowledge and skills of planning, checking, and evaluation activities have been given significance in past reading research (Baker & Brown, 1980). Kendall and Mason (1982) have stated that:

> Metacognition is not a new concept, however its current importance is due to the more precise descriptions of metacognitive behavior that

> researchers are now using, descriptions that were absent in previous work on the topic. (p.11)

Baker and Brown (1980) categorized metacognition into two clusters of activities. The first cluster includes the learner's knowledge of the task, his cognitive resources, and his "compatability with the learning situation" (p. 2). The second cluster includes the strategies and mechanisms which are used to regulate success in the problem-solving activity. These may include:

> (a) checking the outcome of the attempt to solve the problem
> (b) planning the next move
> (c) monitoring the effectiveness of any attempted action
> (d) testing, revising, evaluating strategies for learning (p. 3)

This distinction between activities is substantiated by Moore (1982) who cited two schools of research concerning metacognition: one dealing with the learner's knowledge of various aspects of cognition and thinking, and the other dealing with the learner's regulating or monitoring of the problem-solving situation.

The following are some of the metacognitive skills involved in the reading process (Baker & Brown, 1980):

> (a) clarifying the purposes of reading; understanding both the explicit and implicit task demands
> (b) identifying the important aspects of a message
> (c) focussing attention on the major content rather than trivia
> (d) monitoring ongoing activities to determine whether comprehension is occurring
> (e) engaging in self-questioning to determine whether goals are being achieved

(f) taking corrective action when failures in comprehension are being detected (p. 4 - 5)

The term "metalinguistic knowledge" has been coined to refer to the learner's metacognitive knowledge in the field of language and reading. This includes the learner's awareness of both oral and written language, as is shown in the terms linguistic awareness (Mattingly, 1972), concepts about print (Clay, 1972a, 1979a), and print awareness (Goodman & Altwerger, 1981).

The learning-to-read process can be compared to Fitts and Posner's (1967) three phases of skill development (as cited in Downing, 1979). In the "cognitive phase" the learner becomes aware of the relevant behaviors and the functions and techniques of the task. In learning to read this would include an understanding of the purpose of reading, an awareness of the procedure for operating on print, and knowledge of the relevant information found in print. These concepts would make up the metalinguistic knowledge required of the child in the primary grades. The "mastering phase" includes the practising period which continues until the child can complete the skill successfully. This would relate to the beginning reading process in which the child practises reading strategies with materials of increasing difficulty. The "automaticity phase" is the stage whereby the learner can unconsciously perform the skill. In reading, this would occur when the child has become an efficient independent reader.

In reading instruction areas frequently neglected are the cognitive phase and the automaticity phase (Downing, 1979). The area most relevant to this investigation is the cognitive phase in which children are introduced to the reading process. In this early stage of learning to read, children need experiences with three reading contexts (Mason, 1982): the function of print in which children become aware of the use of print and its relationship to written language, the form of print whereby children become aware of the rules for relating print to speech sounds, and the conventions of print and procedures for engaging in the act of reading and discussing with others what has been read. This is corroborated by Goodman's (1983) similiar principles of written language concerning the functional, linguistic, and relational aspects of language.

A lack of linguistic awareness of spoken and written language has been reported to cause a state of "cognitive confusion" (Downing, 1979; Vernon, 1957) within the child. The cognitive clarity theory of learning to read (Downing, 1979, 1984b) emphasizes both the meaning and function of language, and an understanding of the written code. The following eight principles summarize this theory:

1. Written language is a visible code for the aspects of speech that were accessible to the linguistic awareness of the creators of the code.

2. This linguistic awareness includes simultaneous awareness of the communicative function of language and the particular features of spoken language accessible for logical analysis.

3. Learning to read consists of discovering (a) the functions and (b) the coding rules of the language system.

4. The learner must discover the linguistic awareness of the same features of communication and language as the creators of the system.

5. Children begin reading instruction with partially developed concepts of the functions and features of speech and writing.

6. In reasonably good conditions children increase their cognitive clarity of both the functions and features of language.

7. Although the initial stage of acquiring literacy is the most crucial one, children develop various levels of cognitive clarity as new subskills are introduced and new understandings are gained.

8. The cognitive clarity theory applies to all languages and writing systems.

This theory focusses on the child's clarity of thought in the reasoning and problem-solving components of the learning-to-read process. Evans, Tayor and Blum (1979) stated that:

The theory of cognitive clarity suggests that

> research on reading acquisition examine the interface between the oral language the child brings to initial reading instruction and the task requirements of reading acquisition. This interface may involve children's ability to deal abstractly with language and their developing understanding of how written language works. (p. 8)

By emphasizing phonetics to develop children's concepts of phonemes and their role in meaning change, Ushinsky of the Soviet Union recognized the importance of linguistic awareness in the mid 1800's (Downing, 1984a). In the 1940's Luria (1946, as cited in Downing, 1984a) evolved "the looking glass theory". He compared the spoken language to a looking glass, which is an entity independent of its use, and thereby asserted the identity of language with its own structural features (Downing, 1984a).

Introduction to the Problem

Children enter kindergarten with varying abilities and experiences with oral and written language. There are conflicting opinions in the field of reading concerning children as language users. Many psycholinguists assume that children are efficient in their use of spoken language. They maintain that children learn to understand written language naturally and meaningfully from their exposure to the print materials around them in the same way that they learn to understand spoken language (Goodman, 1976; Smith,

1971). In an analysis of children's speech, however, it is seen that the majority of their language is egocentric and tied to their present environment and situation (Piaget, 1959). Their language is used to formulate and test hypotheses in their daily problem-solving. In the functional context, these experiences may aid them in the reading of signs which have an immediate situational referent. In considering the communicative function of language where the context has to be linguistically deciphered, however, kindergarten children are at a disadvantage. Since their spoken language does not serve a communicative function, their understanding of this aspect of written language is also limited (Downing, 1979). Clark (1973) states that:

> If one considers the extent to which children, even from so-called deprived homes, are bombarded with speech, one appreciates that their difficulties arise not form lack of speech, but from lack of communication. (p. 12)

Children are aided in their attempts to understand the form of print including the structure and organization of the grapho-phonological system through parent intervention and experience with such learning programs as Sesame Street (Mason, 1982). Prior to school entrance children may obtain a degree of knowledge about the names and sounds of letters in the English alphabet.

Mason's (1982) conventions of print include three types of knowledge:

1. knowledge about how to hold a book, turn pages,

and direct one's eyes while reading
2. knowledge of terminology such as book parts, location terms, actions, size, and reading words
3. knowledge about rules and procedures for such school tasks as reading, printing, writing, spelling, phonics exercises, and test taking. (p. 15)

Also included in this context are the social interaction rules and language competence of talking about reading to a teacher. Many of these concepts are not mastered by kindergarten children even though many kindergarten teachers assume that they have been.

Several linguistic capabilities have been studied in literacy research (Ehri, 1979). These include the following: (a) syllable and phoneme consciousness; (b) metalinguistic strategies; (c) terminology, concepts, and structural features of written language.

Knowledge of children's linguistic awareness involved in the reading process has been gained primarily from research utilizing interviews with children in the learning to read process (Moore, 1982). Several testing instruments have been devised to measure children's facility with the various linguistic capabilities. The "Preschool Concepts of Writing" (Goodman & Cox, 1977) are interviews that measure children's concepts about the purposes of reading and writing. The "Book Handling Knowledge" interview (Goodman & Altwerger, 1977) measures children's awareness of conventions of print through the questioning of the child as a short book is read.

Clay's Sand (1972b) and Stones (1977b) tests are administered in a similiar manner combining the actual reading situation and the questioning of the child about concepts of book orientation, whether print or pictures carry the message, directionality of lines of print, page sequences, directionality of words, the relationship between written and spoken language, and the concepts of words, letters, capitals, space, and punctuation.

Hoppe and Kess (1982) have made the following three observations of the progress of metalinguistic abilities:

1. Children detect violations before they can explain them.
2. This applies, not only to language structure, but also to phonology, morphology, syntax, and semantics. There are developmental differences in the application of these abilities to actual structures within each language domain, e.g. tense and plurality.
3. Metalinguistic abilties develop progressively over the middle and late childhood years and continue into adulthood involving a range of individual differences.

Statement of the Problem

This investigation will examine the significant differences between oral language proficiency and understanding of written language at the initial and final stages of the kindergarten program. The possible effects of school entrance age and sex will also be investigated.

Rationale for the Study

Children's oral language proficiency may indicate their awareness and understanding of language and therefore have an effect on their understanding of it in written form. Proficiency with oral language and understanding of written language, being such vast and complicated issues, have been broken up into a variety of measures for purposes of study. Such analytical treatments preclude the effects of synergism.

> While isolating and studying small segments is one of the classical methods of trying to advance detailed understanding, it increases the tremendous difficulty of trying to keep track of and synthesizing the results. (Reid, 1973, p. 29)

A review of the literature indicates that the majority of studies of oral language have dealt with the expressive language of the child. MacGinitie (1975) asserted that the relationship of oral language and comprehension should be studied.

The oral language receptive vocabulary is the measure

used in this investigation. It is assumed that receptive vocabulary reveals a complete picture of the lexical resources available to the child. Whereas measures of oral expressive language gauge only the language performance of the child, the receptive language measures give a thorough indication of his language competency.

Smith and Tager-Flusberg (1980), in an investigation of language comprehension and metalinguistic awareness, studied the interrelatedness of oral language receptive vocabulary, sentence comprehension, and the six metalinguistic concepts: speech sounds, rhymes, concept of a word, arbitrariness of words, morphemes, and word order. They suggested the possibility of:

> ... a close relationship between developments in comprehension processing and metalinguistic awareness. According to this view, the two systems should be conceptualized as overlapping in the time of development and as interacting in the course of development. (p. 2)

They found that metalinguistic performance correlated highly with sentence comprehension (Pearson-r = .75), with vocabulary (r = .75), and with age (r = .72). The correlation between the language measures and metalinguistic measures were significant with age partialled out. Age without the language measures did not show a significant correlation to metalinguistic performance. The four tasks: concept of a word, arbitrariness of words, morphemes, and word order were correlated to vocabulary with age partialled out.

This investigation extended Smith and Tager-Flusberg's study. It focussed on the interrelatedness of oral language receptive vocabulary and metalinguistic awareness of certain aspects of written language as opposed to that of oral language in the previous study. Whereas Smith and Tager-Flusberg designed the tasks of oral language awareness, in this investigation a standardized test has been used to measure awareness of the concepts of written language. Clay's Sand (1972b) and Stones (1979b) tests include print-direction concepts, letter-word concepts, advanced-print concepts, and book-orientation concepts. The measure of metalinguistic awareness in this investigation is seen to be more extensive than the measure used in the Smith and Tager-Flusberg study.

Smith and Tager-Flusberg found that three and four-year-olds (n = 36) can make some metalinguistic judgements on oral tasks. This investigation examined the ability of kindergarten children (age five and six) to make metalinguistic judgements about written language. The larger sample in this study (n = 103) and the added maturity of the children may reveal more reliable results.

Smith and Tager-Flusberg concluded that "it is linguistic knowledge as a function of age ... that is primarily responsible for the emergence of linguistic intuitions" (p.11). They stated further that:

One of the interesting challenges for future work

> is to see whether there is some class of intuitions which departs from this general pattern of interrelatedness or whether this pattern will characterize the whole range of linguistic intuitions that develop through the early and middle years. (p. 11)

Significance of the Study

This investigation focussed on children's concepts of written language, including various conventions of print and metalinguistic terms used in reading instruction. Relating children's oral language to their awareness of these aspects of written language may alert teachers to ranges of levels of awareness that kindergarten children actually possess. Many of these conventions of print are presently assumed by teachers to be understood by kindergarten children and the metalinguistic terms are used by teachers in everyday instruction without clarification of meaning. Often the teacher is unaware of the confusion caused by this incorrect assumption.

> In learning to read, young children are confronted with a complicated array of auditory and visual language concepts which are an integral part of the instructional language used by primary teachers. (Hardy, 1973, p. 50)

The dialogue involved in reading instruction may be made more meaningful to the children by using the terms with explanatory phrases. If children are to discover the distinctive features of written language, the teacher must be aware of the importance of these distinguishing

characteristics and provide examples and contrasts to aid their understanding (Clark, 1973).

Standish and MacGinitie (1959 and 1969, respectively, as cited in Adams and Ollila, 1979), concluded from their reviews of the literature relevant to reading readiness that the best predictors of reading achievement tend to be those that are the most similiar to the criterion. Concepts of print may predict children's success or failure with the first stages of learning to process written language, since it measures children's knowledge of the instructional material and how to operate on it.

Hypotheses

For this investigation, the following hypotheses were proposed for determination. Significant statistical differences at the .05 level of confidence or relationships at the .60 correlation level between the specified variables will indicate an acceptance of the hypotheses.

Specific Hypotheses

1. At the initial testing period for the total group there will be a significant relation between oral language receptive vocabulary as measured by the Peabody Picture Vocabulary Test, Revised Edition (PPVT-R) and concepts about print as measured by

Clay's Sand test.

2. At the final testing period for the total group there will be a significant relation between oral language receptive vocabulary as measured by the PPVT-R and concepts about print as measured by Clay's Stones test.
3. There will be a significant relation between oral language receptive vocabulary gain scores and concepts about print gain scores for the whole group.
4. At the initial testing period there will be significant differences in oral language receptive vocabulary among the school entrance age groups.
5. At the final testing period there will be significant differences in oral language receptive vocabulary among the school entrance age groups.
6. There will be significant differences in oral language receptive vocabulary gain scores among the school entrance age groups.
7. At the initial testing period there will be significant differences in concepts about print among the school entrance age groups.
8. At the final testing period there will be significant differences in concepts about print among the school entrance age groups.
9. There will be significant differences in concepts about print gain scores among the school entrance

age groups.

10. At the initial testing period there will be significant differences in oral language receptive vocabulary between the girls and boys.
11. At the final testing period there will be significant differences in oral language receptive vocabulary between the girls and boys.
12. There will be significant differences in oral language receptive vocabulary gain scores between the girls and boys.
13. At the initial testing period there will be significant differences in concepts about print as measured by Clay's Sand test between the girls and boys.
14. At the final testing period there will be significant differences in concepts about print as measured by Clay's Stones test between the girls and boys.
15. There will be significant differences in concepts about print gain scores between the girls and boys.

Definition of Terms

The following terms to be utilized throughout this investigation are as follows:

Oral language receptive vocabulary: the vocabulary understood by children through hearing spoken words as measured by the Peabody Picture Vocabulary Test, Revised Edition (1981).

Concepts about print: the measure of print awareness of children as calculated through the use of Clay's Sand (1972b) and Stones (1979b) tests.

School entrance age: the school entry age of the child in years and months. School entrance is defined to be September the first even though the date varies slightly each year.

Twelve classifications of children, defined by the month of their birth, were included in this investigation. The calender year is utilized for registration in kindergarten. Therefore, the youngest children are those with December birthdays and the oldest children are those with January birthdays.

For purposes of statistical computations, the data relevant to the twelve classifications was further categorized into the following three groups:

Group A: data concerning the older children whose birthdates occur in the months from January through April.

Group B: data concerning the children whose birthdates occur in the months from May through August.

Group C: data concerning the younger children whose birthdates occur in the months from September through December.

Limitations of the Study

The general applicability of the study depends to a great extent upon the nature of the population considered.

The total population included those who were residents of Corner Brook for the seven months of the study period. With the exception of a small number who may have moved to the location immediately prior to this investigation, the majority were children who from infancy had lived in a relatively small town (i.e., population less than 30,000). These children may not provide the study with diversity of cultural or racial background. Therefore the findings of this study may not be applicable to a large urban area with many immigrant children or to those areas with the French-Canadian culture. Findings may not be applicable to a group of children from a rural area.

Although intelligence tests were not given to the group, it was assumed that the children were of normal intelligence. Those with obvious physical or mental handicaps were not included in the study. Therefore the results may not be applicable to those with physical or mental disabilities.

Because of the random sampling of the children, it was assumed that there would be a wide diversity in the socioeconomic status and educational background of their respective families. The findings, therefore, should be applicable to all levels of these variables.

There was no achievement screening factor in determining the sample population. Results should be applicable to children who come to school with varying levels of ability.

The investigation is limited by the number of children tested. In assessing the influence of school entrance age and sex, the numbers in each group were smaller and served as further limitation.

CHAPTER 2

REVIEW OF RELATED LITERATURE

Introduction

The review of the literature is organized into five main sections. The first section deals with metacognition and concepts about print. The second section deals with oral language and receptive vocabulary. The third deals with the relationship of school entrance age to achievement and the fourth deals with the relationship of sex differences to achievement. The fifth section is a general summary.

Metacognition and Concepts about Print

The rationale for the emphasis on the study of metacognition in oral and written language lies in its assumed importance in the predicting and enhancing of performance in the language arts. This direction has manifested itself in numerous studies of children's knowledge and self-regulatory behavior across various reading tasks (Moore, 1982).

The Babbs and Moe (1983) model of metacognition in the reading process demonstrates the following sequence of reader actions beginning with Baker and Brown's (1980) knowledge cluster and ending with the self-regulatory skill cluster:

1. The reader consciously intends to control the reading act.
2. The reader establishes the goal of the reading act.
3. The reader focusses on his/her metacognitive knowledge:
    (a) knowledge of his/her own cognitive processes
    (b) knowledge of the demands imposed by different reading goals and by different types of reading material
4. The reader strategically plans the regulation and monitoring of the reading act.
    (a) Consideration of metacognitive skills and strategies:
        rereading, skimming, summarizing
        paraphrasing, predicting
        looking for important ideas
        testing one's understanding
        identifying the pattern of text
        sequencing the events
        looking for relationships
        reading ahead for clarification
        mentally executing the directions
        relating new knowledge to prior knowledge
    (b) Selection of metacognitive skills and strategies
    (c) Implementation of the skills and strategies
5. Periodic assessment of reading success

(p. 423)

This investigation dealt with kindergarten children in Holdaway's (1980) emergent reading behavior stage and, therefore, concentrated on the metacognitive knowledge cluster shown early in the Babbs and Moe model. Specifically, the knowledge studies were those of task, purposes, scope, and familiarity with written language.

Children enter the first stages of the learning-to-read process with varying degrees of cognitive confusion about the featural and functional concepts of oral and written

language (Downing, 1979; Reid, 1966). They encounter difficulty with the abstract quality of language and, consequently, are not motivated to work with language in its wirtten form (Vygotsky, 1962). A large part of the metalinguistic knowledge that the young child does bring to school is not fully conceptualized. Clay (1966) listed the following eight concepts about print as children's vague beliefs rather than verbalized formulations:

1. Print carries a message.
2. Print can be expressed in speech.
3. The expression of print has one correct translation to speech.
4. Print must agree with context, including pictures.
5. Print has the directional conventions of left-to-right and return sweep down the page.
6. Print is composed of groups of marks separated by spaces and stops, and is related to spoken words separated by junction.
7. Print consists of patterns of smaller units.
8. Print contains units which are related to sounds in words. (p. 223)

Although children grasp tacit knowledge of language which includes an awareness and understanding of the sound structure, they experience difficulty with the explicit knowledge which involves the abstract concepts on which the orthography is based (Shankweiler & Liberman, 1976, as cited in Downing, 1979). Holdaway (1980) refers to these understandings required for initiation into the reading act as the 'Literacy Set' which includes:

1. motivational factors - high expectations of print
2. linguistic factors - familiarity with written dialect in oral form

3. operational factors - essential strategies for handling written language
4. orthographic factors - knowledge of the conventions or print (p. 157)

Traditional reading readiness tests do not attend to this branch of language knowledge. Specific variables are now being tested in different ways to measure this metalinguistic knowledge. Evans, Taylor and Blum (1979) and Taylor and Blum (1981) used three written language awareness tasks to predict reading achievement. They found that these tasks predicted reading achievement as well as the Metropolitan Readiness Test. They put forth additional information about children's language understandings and skills not accessible through the more traditional measures such as alphabet recognition, matching and copying. The tasks which required interaction of oral and written language were more strongly related to reading achievement than those dealing with only one language mode.

Although the function, form, and conventions of print are seldom taught directly, children obtain awareness and understanding of these related concepts simultaneously through various experiences and manipulations with oral and written language. Children learn to organize, hypothesize, test, and generalize about print (Mason, 1982). Hiebert (1980) found that 56% of variance on print awareness of three, four, and five-year-old children was accounted for by logical reasoning ability, oral language comprehension, and

home experiences with written and oral language. The single best predictor of print awareness was logical reasoning.

Downing's (1979) theory of reading as a reasoning activity has been substantiated by the acceptance of Goodman's (1965) interpretation of reading miscues as examples of child logic and reasoning, and Clay's (1982) relationship between self-correction behavior and later reading success. The child's development of general cognitive clarity indicates:

1. better understanding of the communication purpose of written language
2. clearer conception of the symbolic function of writing
3. better understanding of the processes of decoding and encoding of written language as it relates to spoken language
4. further advanced development of linguistic concepts
5. better understanding of the technical terminology for the abstract units of language

(Downing, 1971-2, p. 19)

The literature reveals that the interview is the most prevalent paradigm used to measure the metacognitive knowledge cluster of young children (Moore, 1982; Baker & Brown, 1980). Although it lacks the degree of objectivity of formal testing, it has been viewed as an acceptable method of studying children's developing concepts of language due to its explorative function with this introspective knowledge (Downing, 1971-2). Evans, Taylor and Blum (1979) found the metalinguistic interview to be the most efficient written language awareness predictor of

reading achievement.

The knowledge cluster studied in this investigation include the following concepts about print evaluated by Clay's Sand (1972b) and Stones (1979b) interviews:

1. concepts about book orientation
2. concepts about directionality of lines of print, page sequences, and directionality of words
3. concepts about whether print or pictures carry the message
4. concepts about the relationship between written and oral language
5. concepts of words, letters, capitals, space, and punctuation (Goodman, 1982, p. 84)

Young children obtain book handling knowledge through many early reading experiences (Holdaway, 1979; Mason, 1982; Smith, 1980). The children who have benefitted from many satisfying experiences with books display independent 'reading-like' behavior. This behavior reveals their familiarity with the language and physical characteristics of books (Holdaway, 1979). There are also many children who enter kindergarten without these book/print experiences. They have not mastered many basic concepts, including beginning, middle, end, first, last, different, same, alike, and rhyme (Hardy, 1973). They do not have mastery of book-related concepts as shown in the following statistics:

concept	% kindergarten children successful in October	% kindergarten children successful in February
book	92	93
front	82	93
title of book	25	25
back	75	95
cover	74	85
page	98	99
turn the page	97	98
title of page	13	20
bottom	54	75
left side	25	34
top	66	75
right side	28	37
line	16	27
word	31	64
letter	72	92
capital letter	34	39
across the page	59	75
consonant	10	07
vowel	02	00

(Hardy, 1973, p. 52)

The following are orthographic factors of book/print awareness within the child's literacy set which aid in breaking the code of written language:

(a) story begins where print begins
(b) the left hand page is read before the right
(c) reading is started at the top of the page
(d) reading is started at the left and proceeds to the right
(e) after a line is read, the reader returns to the next line below on the left side

(Holdaway, 1979, p. 62)

There is a large motor co-ordination component in directional learning in which age plays a facilitating role. The young child learns to focus on important details, to direct attention around the shapes of objects, and to

recognize objects in many different positions. The arbitrary directional features of written language put constraints on this flexibility in interpretation and recognition. Four-year-old children can detect differences in the orientation of symbols but may classify them as being the same (Clay, 1972a).

Directional confusion may result from the interaction between "dominance within the child and perceptual field external to the child" (Clay, 1966, p. 72). The child may distinguish one side of his body from the other due to strong hand preference (Benton, 1959, as cited in Clay, 1972a), which he may then relate to the side on which reading begins. It is not necessary for the child to know the verbal concepts of right and left. The directional concept becomes part of his introspective knowledge about written language. A later mastery stage of this skill is the ability to use either hand in order to point to print (Clay, 1974).

Children from three to four years of age often depend on hand and body movement in conjunction with visual exploration to focus on features of new objects in their environment. This kinaesthetic source of information is obtained through the process of finger pointing in reading (Clay, 1972a). This finger pointing gradually changes to voice pointing, to less emphasis on word juncture, and then to expressing phrases and word groups (Clay, 1966).

Clay (1966) found that children with reading difficulty had more problems with the following directional concepts than successful readers:

1. letter reversals, change in letter sequence, reversal of whole words
2. directional movement in reading
3. directional movement in writing (p. 69)

Possible reasons for these confusions were general immaturity in motor behavior, lack of experiences with books, or the learning and practising of wrong responses (Clay, 1972a).

The sequential development of directional skills begins with large sections of written language and moves its focus to smaller units in the following manner (Clay, 1972a):

1. left-to-right direction of one line sentences or captions
2. return sweep of two or more lines
3. word-by-word sequence within the sentence
4. letter-by-letter or cluster-by-cluster sequence within the word (p. 55)

The average child masters the left-to-right and return sweep convention of reading in approximately six months. Consistency in this requires a longer time with the expressive process of writing (Clay, 1972a).

Johns (1980) studied the advanced print concepts of line and word sequence, letter order, reversibility of words, and punctuation. He concluded that these concepts were major factors in distinguishing between above and below-average readers in grade one.

Many teachers assume that young children come to school with well-formed ideas of the purpose and process of reading.

Their use of language does not, however, necessarily indicate an awareness of language as an entity independent of the message. This language awareness is a prerequisite to concepts of written language (Downing, 1979).

Reid (1966) studied the ideas of five-year-old children about reading and found that they lacked an understanding of the purpose of reading, the relationship between spoken and written language, and the parameters of the reading act. Denny & Weintraub (1963, 1966) found that over one third of the first graders in their study did not know what was involved in learning to read.

Clay (1966) termed the relating of spoken language to its written form, in the emergent reading stage, "matching behavior" with the following eight progressive approximations:

1. page matching of a memorized text to ensure that talking and pointing simultaneously end at the end of the page
2. line matching or caption matching - matching spoken language to print with simultaneous beginning and ending at the end of the line
3. matching on a word or letter level - one to one correspondence of spoken to written words
4. locating specific words - matching only specific spoken words with print, ex. first, last, and repeated words
5. reading the spaces - the staccato word by word reading with voices and finger synchronization
6. discovering errors by motor behavior - self correction behavior due to knowledge of the numerical relationship between spoken and written words
7. word-controlled reading - self monitoring due to recognition of some familiar words
8. visual-vocal mismatch - error detection when word pattern does not match spoken message (p. 79-83)

Papandropoulou and Sinclair (1974) found that children between the ages of four and seven associated the length of a word with the size of the reference object. The children reasoned that the size of an object or the time length of an action would correspond to a printed word with a similiar number of letter units.

Lundberg and Torneus (1978) classified the responses of children aged four to seven years in a similiar study of the relationship between the size of an object and the number of letters in its printed label. These classifications included congruence of object size and word length, neutrality of two words referring to the same object, and incongruence of object size and word length. They concluded that the oldest children displayed a better understanding of the relationship between speech and print and their explanations of their choices were based on information more relevant to the reading process.

The purpose of reading is not thoroughly understood by children even after the emergent reading stage. Myers and Paris (1978) found that second-grade children perceive reading as an "ortho-graphic-verbal translation" (p. 688). The children focussed on reading as an exact recall task rather than a meaning oriented comprehension task.

Morris (1980) identified the following three types of confusions with the word concept:

1. discrimination of spoken words from other verbal stimuli
2. segmenting spoken sentences into individual words
3. visually identifying word boundaries in written language (p. 3)

The word concept is another featural issue in which the child has to focus on the form of the message instead of its meaning. Downing and Oliver (1973-4) found that until 6.5 years of age, children confuse non-verbal sounds, phrases, and sentences with words. Karpova (1955, as cited in Holden & MacGinitie, 1972) discovered that Russian children between the ages of three and a half and seven years could not orally segment sentences. Prepositions and conjunctions were especially confusing to young children. This has been supported by Blachowicz (1978) in a review of the literature with English speaking children. He concluded that common everyday words and "functors" (markers, prepositions, connectors, etc.) were not considered separate from content words.

This segmentation process is equally confusing to children with written language (Evans, Taylor & Blum, 1979). Young children often do not understand that spaces between words indicate word boundaries (Blachowicz, 1978; Ehri, 1975; Holden & MacGinitie, 1972; Michish, 1974). Meltzer and Herse (1969) concluded that children's concept of the written word develops in the following sequential pattern:

1. Letters are words.
2. A word is a unit made up of more than one letter.
3. Space is used as a boundary unless the words are short, in which case they are combined; or long, in which case they are divided.
4. Only long words continue to be divided.
5. Spaces indicate word boundaries except where there is a "tall" letter in the middle of a word. (p. 13)

Many kindergarten children have not mastered the visual word-related concepts as is shown in the following table section:

concept	% children successful in October	% children successful in February
space between	56	86
first	57	88
end	56	83
beginning	48	76
middle	75	93
little word	59	75
long word	67	81
big word	69	80
short word	46	61

(Harding, 1973, p. 53)

Children may generalize about word boundaries from incorrect cues in their instructional materials (Meltzer & Herse, 1969). Downing and Oliver (1973-4) concluded that children using formal reading programs may limit their concept of word to units of three to five letters due to the controlled vocabulary of their primary readers.

Sulzby (1981) suggested that, although younger children do not consider words as distinct and separate units, the absence of conventional spacing in their writing may not indicate a lack of awareness of the boundary concept.

Children do not automatically utilize space conventionally and often display novel approaches to word boundaries.

At the initiation to reading stage, children display confusions about the terminology used in reading instruction (Gibson & Levin, 1975; Roebeck & Wiseman, 1980) and teachers do not address this concern (Robeck, 1982). Downing (1976) refers to this terminology as the "reading register". Such terms as word, letter, sentence, and number are frequently used interchangeably (Blachowicz, 1978). Frances (1973) attributed the difficulty with this terminology to the relatedness and overlap of the concepts.

Oral Language and Receptive Vocabulary

The child's oral language development is indicative of his cognitive development and, as such, should be introduced within that framework.

There is a correlation between language and thought (Piaget, 1973). Although the child does not require language to build cognitive structures from experiences, he is motivated to use language to aid in organizing these cognitive structures (Piaget, 1973) and in progressing "beyond the successive spatial and temporal restrictions of sensorimotor action schemes" (Karmiloff-Smith, 1979, p. 6). As the child interacts with his environment, he depends on the process of categorizing to refine and label his concepts (Bruner, 1965). Progressively differentiating within the cognitive structures gives the child a more elaborate organization and a more thorough understanding of his world (DeStefano, 1978).

The current emphasis in reading is on the reader's obtaining meaning from print. Meaning is carried not in the printed word, however, but from within the reader himself, absorbed from his experiences with,

> ... real things in the world, their distinctive features, and events that have observable and predictable relations between things and people and actions.
>
> (Gibson & Levin, 1975, p. 77)

This principle is supported by Raph (1980) in his

statement:

> ... children cannot begin to comprehend what they are reading ... unless it reflects their existing knowledge constructed through their actions on objects, broad and varied play experiences, self-initiated explorations, learning tasks, and social exchanges with other children and adults. (p. 3-4)

The child generalizes these meanings to language (Gibson & Levin, 1975). The language that the child uses and understands is, therefore, an indicator of the meanings that he has absorbed from his experiential background.

The relationship between oral language and reading is widely recognized (Clay, 1972; Holdaway, 1984; Loban, 1963). Schwartz and Robison (1982) state that:

> ... the reading program is built on a strong initial emphasis on oral language development. Graphic symbols, writing, and print are introduced only after oral language is sufficiently meaningful to take a more abstract form. (p. 236)

The child's manipulations of information in oral form show many levels of complexity ranging from stating and comparing of ideas, to classifying, predicting, patterning, summarizing, and synthesizing of ideas. Whereas the verbal expression of these skills is not possible without the prerequisite concrete experiences (Whyte, 1981), the application of these skills to the reading act is equally impossible without the prerequisite oral language experiences (MacInnes, 1973). In many cases children are asked to perform these skills using written language without the

necessary prior practice in oral form (McInnes, 1973).

The emphasis on oral language has led to new instructional approaches. The language experience approach (Nessell & Jones, 1979; Van Allen, 1967) emphasizes the relationship between speech and print. The emphasis on child oral participation (Hennings, 1978; Rubin, 1980), the instruction and guidance in discussion techniques (Petty, Petty & Beching, 1976), and the emphasis on the child's exposure to different language styles and levels of complexity (Loban, 1967; Ruddell, 1965) stress the child's need for facility with oral language in various situations.

The use of natural language texts integrates the basic principles of these approaches and "attempts to retain all the qualities and cues of a child's natural language" (Clay, 1972a, p. 79). The absence of control on either the vocabulary or syntax requires the child to gain a "set for diversity" (Clay, 1972a, p. 89) so that there will be adequate preparation of reading varied materials for numerous purposes. Clay (1972a) maintained that oral language skills aid the reading process in the following ways:

> (a) as a source of responses
> (b) to support fluency by creating appropriate expectations of what comes next
> (c) for developing checking strategies, rather than traditional word-attack techniques
> (p. 89)

Holdaway (1980) also expressed the importance of oral vocabulary in predicting written language. If children are

expected to feel confident with language in the written form, they must be familiar with it in both the receptive and expressive form.

Oral language plays a part in predicting and understanding written language even after the child has learned to read. Oral reading is one strategy for comprehending difficult material (Clay, 1972a). This forms what Holdaway (1984) refers to as the "eye-voice-ear link" on which beginning readers depend to a large extent.

Although there is general agreement on the theory relating oral and written language, the related research shows no agreement on either methods or results of investigations. As cited in Bagban (1984), many studies of this relationship compare a natural setting of oral language to a formal setting of reading (Carroll, 1966; Samuels, 1978), or compare children's natural progress with oral language to their success with reading as a result of experiences with formal reading programs (Bull, 1974; Hildreth, 1963). Holdaway, (1984), disagreed with the polarity of environmental conditions in which children develop facility with oral and written language. He viewed them both as instances of developmental learning and stressed the following characteristics of both:

1. They occur naturally in an environment in which the mature skill is being used by everyone with obvious functional success.
2. They allow for gradual approximations toward final accomplishments. They begin in the learner role-playing him or her self as

a user of the skill.

3. They are supported by sympathetic, interactive adults who praise often and punish very seldom. Correction is positively presented only for 'mistakes' which are inappropriate to the stage of development. They occur in a secure social environment resonant of optimism for the learner's ultimate success.
4. They are constantly clarified by clear relationships to a total, meaningful, environment of people and things - clamped tightly to sensory experience.
5. They are self-programmed and self-paced. Massive self-motivated practice and repetition occur on self-selected items or sequences which the learner is determined to master.

(p. 14-15)

Hammill and McNutt (1980) studied twenty journals of reading, psychology, special education, and speech, and the procedings of reading conferences for the years 1950 - 1978. Using the criteria of sample size, and correlation of reading measures of listening, speaking, and writing, they collected coefficients from 89 studies and calculated the medians of these coefficients. Using coefficient values of .35 and higher as having predictive value, they found the receptive language variables to have a more positive relationship to reading than expressive language variables. The median coefficient of receptive vocabulary, representing 29 studies and 127 coefficients, was .32.

In a study of syntactic maturity of oral language and first grade reading achievement, Garman (1981) concluded that since beginning readers' knowledge of language is internalized knowledge, a more appropriate measure of oral language may be the receptive listening variable which

agrees with the receptive aspect of the reading process.

Children detect violations in language before they can verbalize the reason for the violation (Hoppe & Kess, 1982). It may be argued that this internalized aspect of the child's knowledge enables him/her to detect violations in speech and written language. Keith, Carnine, Carnine, and Maggs (1981) found that high ability readers performed significantly better than low ability readers in detecting semantic/syntactic violations through the receptive skills of listening and reading.

The child's receptive vocabulary indicates his/her background knowledge which has been absorbed from real and vicarious experiences. A deficiency in background knowledge is one of two general classes of problems which impede effective reading (Baker & Brown, 1980). Becker (1977) viewed deficient vocabulary knowledge as a serious factor in disadvantaged students' reading comprehension problems. He advocated a long term program to systematically teach basic vocabulary.

Graves (1984) expressed the need for vocabulary study beyond the primary grades and described a system for classifying vocabulary on the basis of the reader's knowledge of the word or concept being taught. The system identified the following four categories of vocabulary in order of difficulty for the reader:

Type one words - words which are in the students' oral vocabulary but which they cannot read

Type two words - new meanings for words which are already in the students' reading vocabulary with one or more meanings

Type three words - words which are in neither the students' oral vocabulary nor their reading vocabulary and for which they do not have an available concept but for which a concept can be built

Type four words - words which are in neither the students' oral vocabulary nor their reading vocabulary, for which they do not have an available concept and for which a concept cannot be built

(p. 246-7)

Vocabulary study has been seen to improve comprehension as measured by standardized tests after as short a time span as one semester (Barrett & Graves, 1981) or one year (Draper & Moeller, 1971). These studies refer to study of the more difficult word categories, including terms used in specific content areas. This is not seen to be a problem in the primary grades due to the controlled vocabularies of the reading materials (Menyuk, 1984). In a study of reading and oral vocabularies of proficient grade four readers, Graves (1980) found that the children could read 96% of their oral vocabularies.

Receptive oral language has been shown to be related to reading achievement both through theory and experimental results. Whereas it is evident that it has a positive effect on children's facility in using written language,

Smith & Tager-Flusberg (1980) have found a similiar positive effect on children's metacognitive knowledge about language. They found highly significant correlations between each of four metalinguistic tasks and sentence and vocabulary comprehension. Vocabulary comprehension, as measured by the Peabody Picture Vocabulary Test, was positively correlated with metalinguistic knowledge with both age and sentence comprehension controlled. Smith & Tager-Flusberg concluded that the development of vocabulary and sentence comprehension was interrelated with the development of metalinguistic knowledge.

School Entrance Age and Achievement

It is accepted practice for schools to set an arbitrary minimum age requirement for school entrance. In addition to this minimum requirement, some schools have been noted to have policies which allow enrollment of a number of younger children subject to specific conditions. These conditions generally require early readiness as defined by various measures of intelligence, social and emotional maturity, and physical development (Ahr, 1967; Ammons & Goodlad, 1955; Gerardi & Coolidge, 1983; Hall, 1963).

Birch, Tisdall and Barney (1964) stated that:

> ... early admission for able children is one of the essential elements in a sound policy of admission to and progression through school. Arbitrary admission ages are as much a barrier to flexibility as arbitrary age-grade promotion and static curriculums. (p. 7)

One of the three categories of students eligible for early educational programming in the Mukwonago, Wisconsin Public Schools include:

> .... those students who are in the superior range in social, emotional, physical and intellectual domains or will have a mental age of 5.0 on September 1st.
> (Benedict, Gerardi & Coolidge, 1983, p. 193)

They developed an eleven step early entrance screening procedure which include parent awareness of the kindergarten program, child psychological evaluation, and teacher preparation.

Hedges (1978) viewed chronological age criterion for

school entry as:

> ... a very general indicator that suggests that older "normal" children will, when given school tasks, tend to do better with most tasks than they would a year earlier. (p. 3)

School entrance age has been related to retention rate (King, 1955), adjustment (Carroll, 1963; Hamalainen, 1952), and achievement (Carter, 1956; Davis & Trimble, 1978; Dickinson & Larson, 1963; Durkin, 1962; Hall, 1963; Hedges, 1978; Miller, 1957; Ramey & Janes, 1977).

Donofrio (1977), in his discussion of the "simple factors" which produce learning difficulties describe "Fate's Unfavoured Group" as having:

> ... a July to December birthdate, late maturation verbal difficulty, maleness, an 80 - 90 IQ and hyperkinesis. (p. 28)

This has been given some support in Kalk's, (1982) finding of a four month maturation difference in boys' and girls' school adjustment ability. As a result of this finding, Kalk advocated a four month difference in school entrance dates for boys and girls.

In reviewing the literature relating school entrance age to achievement, Hall (1963) categorized the studies into two groups. They were:

1. studies which compared the achievement of selected pupils who were admitted early to those who were admitted at the required age

2. studies which compared the achievement of groups within the normal range of age appropriate to that grade level.

It should be noted that many studies give both types of information. They include selected pupils who were admitted early and regular entrants.

King (1955) found that early entrants in grade one had greater difficulty in attaining grade levels in academic skills, had higher than normal retention rates, lower daily attendance, and more indications of poor personal and social adjustment in school than regular entrants. She concluded that:

> ... having attained a few additional months of chronological age at the beginning of grade one is an important factor in a child's ability to meet imposed restrictions and tensions that the school necessarily presents. (p. 336)

Hall (1963), using statistics from fourth and sixth grade pupils, found that regular age boys and girls achieved at a higher level than early entrants of the same sex. He also found that early entrant boys were the lowest achieving group. These differences in achievement increased from the third to the sixth grade. Nimicht, Sparks and Mortensen (1963) found a similiar positive relationship between school entrance age and school success. The relationship was, however, not as reliable in predicting grade one success as IQ scores, father's occupation, or sex.

Miller (1957) used four age classifications of students: early entrants having brithdates from January to March, and three groups of regular entrants having birthdates from November to December, April to October, and January to March. She found that early entering students had higher teacher achievement ratings than the young regular entrants with birthdates from November to December. Ramey and James (1977) found that early entrants also maintained high achievement levels. They studied regular entrants, and early entrants who were further grouped according to screening procedures. Results showed significant differences between the two age groups, with the early entrants achieving significantly higher scores on oral vocabulary and language and reading readiness scores.

Davis and Trimble (1978) compared the results of children entering grade one at five years and those entering at six years. They found that the older children scored significantly higher than the younger children on reading, language, math, and the total battery of the CTBS in grade one and four. Carroll (1963) found similiar results with IQ controlled for both groups. Dickinson and Larson (1963), in a study of four age-based groups of regular entrants, found a similiar relationship between age and achievement. They found that the youngest group had the lowest mean composite scores on achievement tests. At the grade eight level, however, Davis and Trimble found that the older

children were significantly higher in reading only.

In examining the research that has been done concerning the relationship of school entrance age to achievement, it is noted that much of the work has compared a controlled group selected on the basis of high IQ measures, positive social and emotional maturity, and early physical development to a general population of regular age entrants which demonstrate a wide diversity of these factors. It is also evident that, due to the nature of minimum age requirements, the early entrant children may have the strong advantages of the selection criteria with as little as one day age difference to the regular age group.

There are differences in the methods used by the investigators to group the children for study. Whereas King (1955) did not use the average group in the study at all; Carter (1956) grouped the average age together with the older children to compare with the younger group. In the studies concentrating on early and regular entrant students, there were vast differences in the sizes of the two groups. Owing to the nature of the early entrant group, it was severely limited in size (Miller, 1957; Weiss, 1962).

In the majority of the research reviewed, the investigators studied grade one children. No studies were found to examine the effects of school entrance age in kindergarten. The only reference to this grade level was

found in King's (1955) work in which she specified that kindergarten was taught in that particular school but was not included in the study as attendance was not compulsory at that level.

Weinstein (1969) criticized the search for "optimal absolute age at which to admit children to first grade" (p. 22). She stated that:

> It is assumed that the teacher adjusts her academic and behavioral expectations to a considerable extent to the abilities of her particular group of students, the primary source of the younger entrant's continuing academic difficulties. (p. 22)

In a similiar vein, Weiss (1962) stated that early entrants of above-average IQ will demonstrate achievement and adjustment according to the average class level. This viewpoint has also been expressed by Benedict, Garardi and Coolidge (1983).

Green and Simmons (1962) and Gredler (1978) maintained that younger children should not be expected to score the same as older children on readiness tests since scores on these tests show a positive relationship to age. They emphasized the need for using gain in performance as an indicator of achievement rather than absolute scores at the end of the school year. It is noted that only post-testing was listed to determine achievement levels for all groups in the research previously cited.

Mason (1982) stressed the importance of early experiences

with print. She stated that "immature" children who display inappropriate social behavior are often left out of reading instruction on the assumption that they require social maturity as a prerequisite for reading. She maintained that this type of behavior may indicate a more obvious need for prereading and reading experience. Showing a similiar contrast to popular belief, Durkin (1962) found in a study of third grade children that those of relatively lower IQ especially benefitted from an early start in reading.

Feeley (1983) found a developmental trend in concepts about print in which task scores increased with age, with considerable variation within age groups. Of the two to five year age groups studied, the greatest variability occurred in the three and four year groups.

Smith and Tager-Flusberg (1980) found a similiar positive relationship between age and concepts about print in a study of kindergarten children. Statistical analysis, however, revealed that with the effects of vocabulary and sentence comprehension partialled out, age was no longer significant. They concluded that the linguistic knowledge growth as a result of age was responsible for the variance in concepts about print.

Sex Differences and Reading

It is generally accepted that sex differences are very significant in reading performance in the lower grades (Lehr, 1982; Maccoby & Jacklin, 1974). It has been noted that girls are superior in early language development (Heatherington & Parke, 1975; Jersild, Telford & Sawrey, 1975; Rubin, 1980), learn to read earlier (Good & Brophy, 1971; Thompson, 1975; Zimet, 1976), experience more success with standardized reading tests (Dwyer, 1973; Gates, 1961), and exhibit a smaller ratio to boys in learning disability or remedial reading classes (Naiden, 1976).

Many theories have been developed to explain this difference in reading performance. Their emphases vary from external and internal learner characteristics, type of learning material, interaction variables with the teacher, and type of learning environment.

One explanation focusses on a different rate or level of maturation whereby girls mature and become ready to learn to read earlier (Dwyer, 1973). Kalk (1982) concluded that the academic performances of boys and girls indicated a four month maturation difference and he suggested a four month delay in school entry for boys. This maturational explanation may seem logical in light of girls' earlier language development. A thorough comparison of the developmental pattern of boys and girls reveals that although

girls perform better than boys in reading, verbal fluency and artistic tasks, boys outperform girls on spatial and mechanical skills, science and mathematical reasoning (Stein & Smithells, 1969).

Gambrell and Koskinen (1982) found that boys benefitted more than girls when asked to use mental imagery in reading expository passages. This may be related to boys' greater ability to deal with spatial relationships.

Helfedt (1983) addressed the issue by focussing on the differences rather than inferiorities in information processing of boys. Boys are more visually oriented than girls and more consistently activate the right hemisphere of the brain (Helfedt, 1983). This results in more active manipulation of objects around them and earlier math and science concepts. Girls make more use of left hemisphere stimulation resulting in earlier and more extensive use of language in solving problems (Helfedt, 1983). Whereas girls benefit more form listening activities than boys, boys benefit more from hands-on activities than girls. This difference in information processing is associated with differences in reading performance. Right hemisphere processing which is identified in boys is associated with slow and accurate performance. Left hemisphere processing which is identified in girls is associated with faster, less accurate performance.

The learning materials used in early reading have been studied to determine their effects on boys' and girls' reading performance. Zimet (1975) found that the content of many of the basal stories encouraged dependent actions and discouraged aggressive behavior. The use of more dynamic models in basal stories, however, did not make a significant difference to the reading scores of boys.

The interaction effects between boys and female elementary teachers have been studied as a factor in the sex differences issue. Good and Brophy (1971) studied differential teacher behavior and found that, although there was no difference in treatment during reading instruction, boys were chastised more than girls when total school day was analyzed. They concluded that teacher behavior did not have a significant effect on sex differences in reading. Shapiro (1980) found that the sex of the teacher did have an effect on reading attitudes. Boys and girls with male teachers had significantly better attitudes toward reading than those with female teachers.

Cultural explanations for the male sex role have been studied. Boys' perceptions of school and reading as inappropriate to or in conflict with the development of the male sex role may have an effect on their reading performance (Dwyer, 1973). Downing and Thomson (1977) studied sex-role stereotyping of university students, adults

children in grade one, four, eight, and twelve. They found that all except grade one children thought of reading as a "feminine" activity. Generally, boys are encouraged to participate in gross motor activities and girls are encouraged to display more sedentary type behavior conducive to reading (Downing, 1975). Stanchfield (1973) found that a research program designed to teach reading using active, exciting approaches to appeal to boys did not result in significant differences in boys' reading achievement at the end of the kindergarten year.

Stein and Smithells (1969) investigated the sex-role standards of grade two, six and twelve children about athletic, spatial and mechanical, arithmetic, reading, artistic, and social skills. The difference between boys' and girls' standards was greatest at the grade two level. Reading was generally found to be one of the most feminine skills.

Gross (1978) studied the sex-role standards and reading achievement of children in the Israeli Kibbutz system. He found no differences in sex-role standards, expectations of achievement, or reading achievement between boys and girls.

Sex differences in reading achievement are recognized to last until approximately ten years of age. By this time the differences have gradually disappeared. The diminishing nature of this developmental trend is further corroborated by Dwyer (1973) and Good and Brophy (1971).

In light of this difference in reading performance of boys and girls, it is logical to assume that boys are behind in knowledge of language during early reading instruction. There was no significant difference between boys' and girls' oral language proficiency, however, as measured by the Record of Oral Language (Day & Day, 1978). It has also been noted that boys and girls develop the ability to segment oral language at the same rate (Kelly, 1977).

Scheuneman and Mitchell (1979) tested auditory memory, rhyming, letter recognition, visual matching, school language and listening, and quantitative language of beginning kindergarten children. They found significant differences favouring girls for all variables except rhyme. The biggest differences were in auditory memory, letter recognition, and visual matching - the latter two being the two best predictors of year end achievement in reading. They concluded that girls have better prereading skills at the time of initial school entrance. This is supported by Day and Day's (1978) finding that girls had significantly higher results in concepts about print as measured by Clay's Sand (1972b) test.

Hiebert's (1980) research showed the importance of home experiences with written language. The general comparison of boys' and girls' behavior indicates that cultural expectations of girls' behavior may be more conducive

to these experiences than that of boys who are encouraged in large muscle activities. Boys do not display behavior favourable to listening to stories, sitting down to print, imitating reading behavior, etc. Therefore, girls may have the advantage of more home experiences with print before they come to school.

Summary

Throughout the preceding sections both oral language and metalinguistic knowledge have been treated within the cognitive framework. Whereas young children have been noted to use hypothesis testing with vocabulary meaning and usage, these problem-solving techniques are also used in their efforts to understand the concepts and conventions of written language. Contrary to many simplistic reading theories, children must absorb a multitude of understandings about oral and written language before they can succeed with the reading process.

Children require varied experiences with the interaction of oral and written language to fully develop an understanding of the relation between the two language modes. Holdaway's (1984) concept of developmental learning illustrates the conditions in which children become familiar with and develop the appropriate skills and concepts of written language. The importance of home experiences with print prior to and concurrent with the kindergarten year is stressed in the concept of developmental learning.

Owing to societal expectiations of behavior appropriate for boys and girls, boys may be in the disadvantaged position of not receiving or being encouraged to participate in experiences with print. Reading-like behaviors which are imitations of successful reading models, may not develop naturally. The boys may, therefore, not gain the

understandings of written language or the positive attitudes toward the reading process.

School entrance age is a concept which classifies the children in a specific class by age. Because the concepts and skills associated with knowledge of written language and reading are developmental in nature, it follows logically that the younger children may require a longer period of time to acquire specific levels of understanding. Owing to the age of kindergarten children and the nature of minimum age requirements for grade levels, it is noted that a kindergarten child with a January birthday may be 20% older and have had 20% more opportunities for learning than a kindergarten child with a December birthday. While these cautions do not necessarily mean that younger children will not succeed, they may be utilized to foster better understanding of the children in their developmental learning process.

CHAPTER 3

SOURCES OF DATA: METHOD & PROCEDURE

Introduction

The following sections describe the investigation and the procedures which were utilized in its operation.

Setting for the Study

The study took place in the town of Corner Brook which has a population of approximately 30,000 people. Five Corner Brook schools of the Bay of Islands - St. George's Integrated School Board were chosen for investigation. They included Country Road Primary School, Humber Elementary School, C. C. Loughlin Elementary School, Milley Primary School and S. D. Cook Elementary School.

In the integrated schools of Corner Brook a combination of approaches and programs are used in reading readiness. The Something Special (Winegert & Pearson, 1976) readiness program, the Hickory Hollow (McInnes, Gerrard, & Rychman, 1977) readiness program, and the Breakthrough to Literacy (Mackay, Thompson, & Schaub, 1978) program are being used. The language experience approach is being used in varying

degrees both in association with these programs and throughout the total kindergarten program. The kindergarten curriculum is seen to be eclectic and focusses on meeting the needs of the students. The teachers aim toward flexibility of programming and grouping to achieve this end.

The investigation occurred over an eight month period from November 1983 to June 1984.

Selection of Population Sample

Within the five schools the total kindergarten population numbered 227. In determining the population sample, screening procedures were not used to differentiate among children on the basis of achievement, preschool experience, education of parents, etc. The investigator's kindergarten class was exempted to prevent experimentor bias.

A random sampling of kindergarten students were compiled through the application of the table of random numbers (Kerlinger, 1973). Although the target sample for this investigation was 100, the larger number of 125 was chosen for initial testing. It was predicted that this procedure would allow for the loss of study subjects throughout the eight month study period for various reasons, such as family mobility and child illness on scheduled testing days. One Down's Syndrome child was excluded from the initial testing. The remaining 124 children were

assumed to be within the normal range of physical and mental characteristics.

The following tables show the classification of kindergarten students according to the secondary variables of sex and school entrance age. School entrance age is defined by the month of the students' birth with the oldest students born in January and the youngest students born in December.

Month	#
Jan.	15
Feb.	13
Mar.	16
Apr.	9
May	6
June	6
July	9
Aug.	10
Sept.	16
Oct.	3
Nov.	12
Dec.	9
Total	124

Sex	#
Male	63
Female	61
Total	124

Parental permission for the children's involvement in the investigation was obtained in writing. A copy of the letter which was sent to parents is included in Appendix A.

Testing Instruments

Oral Language Receptive Vocabulary

The Peabody Picture Vocabulary Test, Revised Edition (1981) (PPVT-R) was used to measure oral language receptive vocabulary. This is a picture response test that links the spoken word with a choice of four pictures. Because of its

response method it can be used with non-readers. The standardization of this test, for the ages applicable to this investigation, was based on six hundred children with equal numbers of boys and girls and with a balance of rural - urban and occupational representation. Owing to the recency of this test, only one independent evaluation was available. Therefore, information concerning its reliability and validity is based on the authors' presentation in the manual.

Content Validity

The content of the test is a selection from all the words which could be illustrated from Webster's New Collegiate Dictionary (1953). A total of 350 words were chosen (175 per form) and the following nineteen categories were represented:

1. actions
2. animals
3. buildings
4. clothing
5. descriptors
6. foods
7. household and yard fixtures
8. household utensils
9. human body parts
10. human workers
11. human and humanoid forms
12. mathematical terms
13. plants and their parts
14. produce
15. school and office supplies and equipment
16. tools, machinery and scientific apparatus
17. toys, musical instruments and recreational items
18. vehicles and other means of transportation
19. weather, outdoor scenes and objects, geographical items

Construct Validity

When used to measure hearing vocabulary "its rational validity rests on its content validity" (Dunn and Dunn, 1981, p. 59).

Criterion - Related Validity

No predictive - validity data is available because of the recency of the revision. However, in comparing this test to the older 1959 version of the PPVT, the median correlation of raw score is .72 and the standard score is .68 (Dunn and Dunn, 1981, p. 60).

Reliability

According to the test manual, for the split half reliabilities of children and youth, the coefficients ranged from .67 to .88 with a median of .80 on the L form and ranged from .61 to .86 with a median of .81 on form M. The data for the age groups of this investigation is shown as follows:

Age Group	Form L		Form M	
	N	r_c	N	r_c
4-6 - 4-11	101	.70	99	.74
5-0 - 5-5	100	.79	100	.78
5-6 - 5-11	98	.73	102	.84

(Dunn and Dunn, 1981, p. 54)

For standard scores, the immediate retest alternate-forms reliability coefficients ranged from .71 to .79. Data for the age range of this investigation are listed below:

Age Group	N	For Raw Score	For Standard Score
4-0 - 4-11	63	.74	.76
5-0 - 5-11	52	.80	.77

(Dunn and Dunn, 1981, p. 56)

For standard scores, the delayed retest alternate-forms reliability coefficients ranged from .54 to .90 with a median of .77. Data for the age range of this investigation are listed below:

Age Group	N	For Raw Score	For Standard Score
4-0 - 4-11	110	.78	.77
5-0 - 5-11	92	.60	.58

(Dunn and Dunn, 1981, p. 56)

In a test review of the PPVT-R, Jongsma (1982) noted that the 1981 edition of the test included many improvements over the 1959 edition. The major improvement was the norming process which was based on a more representative sample of American children and adolescents. Two weaknesses listed were lack of evidence of validity and curricular relevance of items.

Concepts About Print

Clay's Sand (1972b) and Stones (1979b) tests were used to measure concepts about print. These tests consist of individual child interviews during which the child is questioned about his/her knowledge of print as a children's picture book is being read. In an examination of the internal structure of the Sand test, Johns (1980) classified

the twenty-four items of the test into four patterns as shown below:

Pattern and Item	Concept Description
Pattern 1:	Book-orientation concepts
Item 1	Orientation of book: child identifies front of the book.
Item 2	Print, not picture carries message: child points to print.
Item 11	Left before right: child recognizes that a left page is read before the right page.
Pattern 2:	Print-direction concepts
Item 3	Directional rule: child points to top left line of print.
Item 4	Directional rule: child shows that print goes left to right.
Item 5	Directional rule: child shows return sweep.
Item 6	Word by word pointing: child points to each word as it is being read.
Item 7	First and last: child points to first and last part of text.
Item 9	Inversion of print: child shows how the following should be read: *The waves splashed into my hole in the sand.
Item 16	Period: child names or explains the function.
Pattern 3:	Letter-word concepts
Item 8	Inversion of picture: child points to bottom of upside-down picture.
Item 19	Capital/lower case correspondence: child is shown M and H and locates m and h. (T/t is demonstrated.)
Item 21	Letter: child shows one and two letters
Item 22	Word: child shows one and two words.
Item 23	First and last letter: child identifies the first and last letter in a word.
Item 24	Capital letter: child points to a capital letter.
Pattern 4:	Advanced-print concepts
Item 10	Line sequence: child recognizes that bottom line is read before top line.
Item 12	Word sequence: child recognizes that word sequence is incorrect (I sat the in hole ...) when test is read as if it were correct.
Item 13	Letter order: child recognizes that letter order is incorrect (I sat ni eth hole) when test is read as if it were correct.

Item 14	Reordering letters: child recognizes that letter is incorrect (Shall I mkae a hlil) when test is read as if it were correct.
Item 15	Question mark: child names or explains the function.
Item 17	Comma: child names or explains the function.
Item 18	Quotation marks: child names or explains the function.
Item 20	Reversible words: child points to 'was' (not 'saw') and 'no' (not 'on').

(p. 538)

Sand (1972b) and Stones (1979b) were devised for use with children in New Zealand. The Sand test was normed in 1968 on the basis of results of 320 urban New Zealand children aged 5:0 to 7:0. The Stones test was normed in 1978 according to the results of 282 urban New Zealand children aged 6:0 to 7:3. Clay (1979a) states a reliability coefficient of 0:95 KR using 40 urban 5 to 7 year old children for the Sand test. As a measure of validity, it showed a 0.79 correlation with word reading for the 100 6-year-old children.

It is assumed that these tests are equally appropriate for use with Canadian children. Day and Day (1978) used the Sand test with 56 kindergarten children in Texas. They found test-retest reliability coefficients ranging from .73 to .89 and corrected split-half coefficients ranging from .84 to .88. They interpreted these findings to support the use of the Sand test with American children.

Results of three administrations of the Sand test, three of which occurred in the kindergarten year and one at

the beginning of grade one, were correlated with the Metropolitan Readiness Test which was administered at the beginning of grade one (Day and Day, 1978). Correlations between the composite score of the MRT and the four scores of the Sand test ranged from .61 to .72.

Johns (1980) found a reliability coefficient of .82 KR for a sample of 60 first-grade students, with equivalent sub-groups of above-average, average, and below-average readers. Significant differences of Sand results were found between types of reader at the .001 level. Reeves (1982, as cited in Feeley, 1983) in a study similiar to Johns' (1980), found a significant F ratio ($p = .003$) showing significant differences in Sand results of above-average, average, and below-average readers. A positive correlation of .72 was found between results on the Sand and the Gates-MacGinitie Reading Test.

It is noted that the above statistics refer to the Sand test. Similiar results of the Stones test were not found in a literature search.

Goodman (1982) stated that:

> ... the 'Concepts about Print Test' is a significant beginning in evaluative measures that provide insight into what children know about written language. (p. 85)

Cautions were advised, though, in using these tests with American children. Differences were noted in the ages of American and New Zealand children's performance on some of

the test items. Problems in cultural and racial orientation were suggested in using the test with the wide diversity of American students. The Newfoundland community, however, does not reflect the same diversity of cultural and racial orientation. Problems of this type were not evident in the present study.

Goodman (1982) also noted some problems in the implementation of the test. In some cases, children have been noted to focus on the story line rather than irregularities in print conventions. This was also the case in the present investigation. However, added questioning demonstrated that children who exhibited familiarity with written language focussed on both story line and print conventions.

Method and Procedure

Initial and Final Testing Periods

Owing to the nature of the kindergarten child and the difficulties that many of them have in adjusting to the school environment and routine, initial testing took place after the children had an opportunity to develop a sense of belonging in the kindergarten classroom.

The tests were administered by the investigator in each child's school during regular school hours. The children were interviewed individually in a vacant room near the classroom. They displayed positive attitudes toward their turn to "play the games". It was evident that the children were more confident in the final testing period. This may have been due, in part, to their prior experience with the testing procedure.

Initial testing was done in the last three weeks of November, 1983, using form L of the PPVT-R and Clay's Sand test. Final testing was done in the last two weeks of May and the first week of June, 1984, using form M of the PPVT-R and Clay's Stones test. The initial and final interview schedules were arranged to allow a six month term between testing periods. It was assumed that the kindergarten teachers carried out the regular prescribed kindergarten programs and did not deliberately vary their instruction to interfere with the investigation during the six month intervening period.

To ensure this, the teachers were not told the specific nature of the tests or the investigation. Test results were kept confidential except upon parental request at the conclusion of the investigation.

Of the 124 children chosen for study, 103 were available during both testing periods. The following tables show their classification on the basis of school entrance age and sex:

Month	#
January	14
February	11
March	12
April	6
May	5
June	4
July	7
August	10
September	16
October	2
November	8
December	8
Total	103

Sex	#
Male	53
Female	50
Total	103

Porcedure in the Treatment of Data

The raw scores of the PPVT-R and Clay's Sand and Stones tests were converted to percentage scores for use in the analysis of variance.

An analysis of the data was undertaken utilizing the Pearson Product-Moment Correlation Coefficient as a measure of the proportion of accountable variance between PPVT-R and the concepts about print tests, Sand and Stones.

An analysis of variance, in the form of an F-test, was utilized to measure the significant differences, if any, on the PPVT-R and concepts about print tests, Sand and Stones, and between children of different sex and school entrance ages.

In the calculations involving school entrance age, the data collected from the twelve classifications of children, as defined by their month of birth, was further grouped as follows:

Group A: data from the oldest children whose birthdates occur in the months from January through April

Group B: data from the children whose birthdates occur in the months from May through August

Group C: data from the youngest children whose birthdates occur in the months from September through December

CHAPTER 4

FINDINDS AND DISCUSSION

Introduction

The hypotheses have been categorized into three groups for verification and discussion. The first group includes hypotheses 1, 2, and 3 which deal with the relationship between oral language receptive language, concepts about print, and their subsequent gains over the six month instructional period for the whole group. The second group includes hypotheses 4 through 9 which investigate the effects of the secondary school entrance age variable. The third group includes hypotheses 10 through 15 which investigate the effects of the secondary sex variable.

The final section of this chapter gives an analysis of the results of the concepts about print test, Sand and Stones. This analysis is compared to the results of the Sand test as reported in the Day and Day (1978) study.

Oral Language Receptive Vocabulary & Concepts about Print

The oral language receptive vocabulary and concepts about print raw scores were converted to percentage scores for statistical calculations and are listed in Appendix E.

Pearson Product-Moment Correlation Coefficients were computed on the data to investigate the strength of the relationship between the specified variables. A coefficient of 0.60 was utlized as the basis upon which the hypotheses were accepted or rejected. Complete tables of correlations for the whole group, the girls, and the boys are included in Appendix B.

HYPOTHESES # 1 At the initial testing period for the whole group there will be a significant relation between oral language receptive vocabulary and concepts about print.

Table IV.1 presents the correlative information pertinent to the hypotheses.

TABLE IV.1

The Correlation Coefficient, Means, Medians, and Standard Deviations for Oral Language and Concepts about Print at the Initial Testing Period

Variables	OL1	CP1	M	Median	SD
OL1		0.687	64.1	64.3	15.1
CP1	0.687		36.3	37.5	19.4

To determine the amount of variance shared by the variables, the correlation was squared. Subsequently it

was found that 47.20% of the variance in oral language was associated with variance in concepts about print. The coefficient was considered significant and the hypothesis was accepted.

In a separate examination of the girls' and boys' data, it was found that the correlation for the girls was slightly lower than that for the boys. The results of an analysis of the relationship between oral language and concepts about print for the girls are presented in table IV.2 and for the boys in table IV.3. Both were above the predetermined level for significance.

TABLE IV.2

The Correlation Coefficient, Means, Medians, and Standard Deviations for Oral Language and Concepts about Print for the Girls at the Initial Testing Period

Variables	OL1	CP1	M	Median	SD
OL1		0.688	63.7	65.3	14.9
CP1	0.688		40.0	41.7	18.9

TABLE IV.3

The Correlation Coefficient, Means, Medians, and Standard Deviations for Oral Language and Concepts about Print for the Boys at the Initial Testing Period

Variables	OL1	CP1	M	Median	SD
OL1		0.718	64.4	63.3	15.5
CP1	0.718		32.7	25.0	19.3

It is noted that there was a greater difference between the mean and median of concepts about print scores for the boys than for the girls. It is assumed that the majority of the boys scored below their mean and a minority with high scores were responsible for increasing the mean to 32.7.

HYPOTHESIS #.2 At the final testing period for the whole group there will be a significant relation between oral language receptive vocabulary and concepts about print.

Table IV.4 presents the correlative information relevant to the hypothesis.

TABLE IV.4

The Correlation Coefficient, Means, Medians, and Standard Deviations of Oral Language and Concepts about Print at the Final Testing Period

Variables	OL2	CP2	M	Medians	SD
OL2		0.650	72.8	77.1	13.9
CP2	0.650		61.7	66.7	18.5

The correlation was squared and it was determined that 42.25% of the variance in oral language was associated with variance in concepts about print. The coefficient was significant and the hypothesis was accepted.

In a separate examination of the girls' and boys' data, it was found that the girls' correlation was higher than that of the boys. The results of an analysis of the relationship between oral language and concepts about print for the girls are presented in table IV.5 and for the boys in table IV.6. Both were higher than the 0.60 level required for significance.

TABLE IV.5

The Correlation Coefficient, Means, Medians, and Standard Deviations of Oral Language and Concepts about Print for the Girls at the Final Testing Period

Variables	OL2	CP2	M	Median	SD
OL2		0.761	73.0	78.1	14.2
CP2	0.761		66.0	66.7	13.3

TABLE IV.6

The Correlation Coefficient, Means, Medians, and Standard Deviations of Oral Language and Concepts about Print for the Boys at the Final Testing Period

Variables	OL2	CP2	M	Median	SD
OL2		0.641	72.6	74.3	13.8
CP2	0.641		57.6	62.5	21.7

It was found that 57.91% of the variance of oral language was associated with variance in concepts about print for the girls as compared to 41.09% for the boys. When compared to the results at the initial period, it is noted that the precentage of variance association for the girls increased 10% and for the boys decreased 10% over the six month instructional period.

As in the final testing period, there was a greater difference between the mean and median of concepts about print scores for the boys than for the girls. This difference, however, was not as great as that in the initial period.

HYPOTHESIS # 3 There will be a significant relation between oral language receptive vocabulary gain scores and concepts about print gain scores for the whole group.

Table IV.7 presents the correlative information relevant to the hypothesis. The correlation was not significant and the hypothesis was, therefore, rejected.

TABLE IV.7

The Correlation Coefficient, Means, Medians, and Standard Deviations for Oral Language Gain and Concepts about Print Gain for the Whole Group

Variables	OLG	CPG	M	Median	SD
OLG		-0.004	8.7	8.5	8.6
CPG	-0.004		25.4	25.0	12.8

In a separate examination of the girls' and boys' data, a difference in direction was noted between the girls' and boys' correlations. Neither correlation, however, was

significant. The results of an analysis of the relationship between oral language gain and concepts about print gain are presented in table IV.8 for the girls and table IV.9 for the boys.

TABLE IV.8

The Correlation Coefficient, Means, Medians, and Standard Deviations of Oral Language Gain and Concepts about Print Gain for the Girls

Variables	OLG	CPG	M	Median	SD
OLG		0.054	9.2	9.6	9.2
CPG	0.054		25.9	25.0	12.7

TABLE IV.9

The Correlation Coefficient, Means, Medians, and Standard Deviations of Oral Language Gain and Concepts about Print Gain for the Boys

Variables	OLG	CPG	M	Median	SD
OLG		-0.069	8.2	7.6	8.1
CPG	-0.069		24.9	25.0	13.0

Discussion

The relationship between the two independent variables did not change significantly for the whole group throughout the six month instructional period in the kindergarten classes. This suggested that the children made consistent, even progress in both areas. This also indicated that the teaching during the instructional period in combination with the secondary variables of school entrance age and sex did not alter the development to any significant extent. This was not proven from the statistics, however, as a significant correlation between the major variable gain scores was not found. Therefore, anomalies not obvious to an examination of the whole group were indicated.

In an examination of the separate correlations of the boys and girls, an irregularity was noted. At the initial testing period, the boys' correlation was 0.030 higher than the girls' correlation. At the final testing period the boys' correlation was 0.120 lower than the girls'. A 0.077 overall decrease in the boys' correlation and a 0.073 overall increase in the girls' correlation was evident from the data.

At the initial testing period the boys' concepts about print scores revealed a large difference between the mean and median, thereby indicating an irregular dispersion of scores for the boys. It was assumed that most of the boys

performed below the mean and a smaller number of high scores were responsible for the level of the mean. This was less pronounced at the final period and was not shown in the gain scores.

School Entrance Age

Oral language and concepts about print raw scores were converted to percentage scores for statistical calculations and are listed in Appendix E. F tests were computed on the data to determine whether significant differences exist between the specified variables. The .05 level of confidence was utilized as the basis upon which the hypotheses were accepted or rejected.

HYPOTHESIS #4 At the initial testing period there will be significant differences in oral language receptive vocabulary among the school entrance age groups.

The oral language results as categorized by school entrance age are presented in table IV.10. The similiarity of standard deviation signify corresponding ranges of scores for each group.

TABLE IV.10

Means, Medians, and Standard Deviations of Oral Language when grouped by School Entrance Age at the Initial Period

Group	M	Median	SD
Older Children	69.4	69.9	14.3
Average Age Children	64.2	63.8	14.7
Younger Children	59.8	58.2	14.5

An F test (table IV.11) computed on the data revealed that the variance between the school entrance age groups was significantly greater ($p < .025$) than the variance within the three groups. The hypothesis was, therefore, accepted.

TABLE IV.11

Analysis of Variance for the Relationship between Oral Language Scores of the School Entrance Age Groups at the Initial Testing Period

Source of Variance	Sum of Squares	df	Mean Square	F	p
between groups	1763.40	2	881.70	4.12	.025
within groups	21631.03	101	214.17		
Total	23394.43	103			

HYPOTHESIS # 5 At the final testing period there will be significant differences in oral language among the school entrance age groups.

The oral language results as categorized by school entrance age are presented in table IV.12. The differences in oral language by age were more pronounced than at the initial testing period. The younger children's scores revealed a larger standard deviation than the other age groups suggesting a wider range of scores. The other groups' scores revealed a narrower range around a higher mean.

Differences between mean and median indicated that the majority of children in all groups scored above their mean. The greatest difference was seen for the older children. It is assumed that a minority of very low scores were responsible for lowering the mean to 78.1.

TABLE IV.12

Means, Medians, and Standard Deviations of Oral Language of School Entrance Age Groups at the Final Period

Group	M	Median	SD
Older Children	78.1	90	11.6
Average Age Children	72.8	74.75	12.3
Younger Children	68.5	72.4	14.9

An F test (table IV.13) computed on the data revealed that the variance between the school entrance age groups was significantly greater ($p < .001$) than the variance within the three groups. The hypothesis was accepted.

TABLE IV.13

Analysis of Variance for the Relationship between Oral Language Scores of the School Entrance Age Groups at the Final Testing Period

Source of Variance	Sum of Squares	df	Mean Square	F	p
between groups	1738.29	2	869.14	4.87	<.001
within groups	18014.45	101	178.36		
Total	19752.74	103			

HYPOTHESIS # 6 There will be significant differences in oral language gain scores among the school entrance age groups.

The oral language gain results as categorized by school entrance age are presented in table IV.14.

TABLE IV.14

Means, Medians, and Standard Deviations of Oral Language Gains of the School Entrance Age Groups

Group	M	Median	SD
Older Children	8.7	7.6	7.9
Average Age Children	8.6	8.0	7.3
Younger Children	8.8	8.0	9.7

An F test (table IV.15) computed on the data revealed that the variance between the school entrance age groups was less than the variance within the groups. The hypothesis was rejected.

TABLE IV.15

Analysis of Variance for the Relationship between Oral Language Gain Scores of the School Entrance Age Groups

Source of Variance	Sum of Squares	df	Mean Square	F	p
between groups	.42	2	.21	.00	NS
within groups	7598.39	101	75.23		
Total	7598.81	103			

HYPOTHESIS # 7 At the initial testing period there will be significant differences in concepts about print among the school entrance age groups.

The concepts about print results as categorized by school entrance age are presented in table IV.16. The younger children show the narrowest range of scores around the lowest mean.

TABLE IV.16

Means, Medians, and Standard Deviations of Concepts about Print Scores of the School Entrance Age Groups at the Initial Period

Group	Mean	Median	SD
Older Children	41.2	41.7	19.3
Average Age Children	37.0	39.6	20.1
Younger Children	32.0	29.2	17.8

An F test (table IV.17) computed on the data revealed that the variance between the school entrance age groups was not significantly greater than the variance within the three groups. The hypothesis was rejected.

TABLE IV.17

Analysis of Variance for the Relationship between Concepts about Print Scores of the School Entrance Age Groups at the Initial Period

Source of Variance	Sum of Squares	df	Mean Square	F	p
between groups	1625.72	2	812.86	2.24	NS
within groups	36694.89	101	363.32		
Total	38320.61	103			

HYPOTHESIS # 8 At the final testing period there will be significant differences in concepts about print among the school entrance age groups.

The concepts about print results as categorized by school entrance age are presented in table IV.18. The medians for all three groups were higher than the mean. The younger children show the narrowest range of scores around the lowest mean as in the initial period.

TABLE IV.18

Means, Medians, and Standard Deviations of Concepts about Print Scores of the School Entrance Age Groups at the Final Testing Period

Group	Mean	Median	SD
Older Children	66.4	70.8	20.0
Average Age Children	60.1	64.6	19.4
Younger Children	58.9	62.5	15.5

Results from an F test (table IV.19) computed on the data revealed that the variance between the school entrance age group was not significantly greater than the variance within the three groups. The hypothesis was rejected.

TABLE IV.19

Analysis of Variance for the Relationship between Concepts about Print Scores of the School Entrance Age Groups at the Final Period

Source of Variance	Sum of Squares	df	Mean Square	F	p
between groups	1158.51	2	579.26	1.74	NS
within groups	33704.69	101	333.71		
Total	34863.20	103			

HYPOTHESIS # 9 There will be significant differences in concepts about print gain scores among the school entrance groups.

The concepts about print gain data as categorized by school entrance age are presented in table IV.20.

TABLE IV.20

Means, Medians, and Standard Deviations of Concepts about Print Gain Scores of the School Entrance Age Groups

Group	Mean	Median	SD
Older Children	25.2	25.0	14.6
Average Children	23.1	22.9	10.2
Younger Children	26.9	27.1	12.3

Results from an F test (table IV.21) computed on the data revealed that the variance between the school entrance age groups was less than the variance within the three groups. The hypothesis was rejected.

TABLE IV.21

Analysis of Variance for the Relationship among Concepts about Print Gain Scores of the School Entrance Age Groups

Source of Variance	Sum of Squares	df	Mean Square	F	p
between groups	242.84	2	121.42	.74	NS
within groups	16476.40	101	163.13		
Total	16719.24	103			

Discussion

There were significant differences in oral language receptive vocabulary among the age groups at both testing periods. Although the differences were slightly greater at the final period the differences in gain scores were negligible. A fairly regular distribution of gains in oral language throughout the age groups was revealed. Variance within the school entrance age groups were greater than those between the groups.

The differences in concepts about print among the age groups were not significant at either testing period. The differences were slightly less, however, at the final period than at the initial period. The differences between school entrance age groups in print concept gain scores were less than the differences within groups, indicating that print concept gains were distributed throughout the age groups fairly regularly.

Sex

Oral language and concepts about print raw scores were converted to percentage scores for statistical calculations and are listed in Appendix E. F tests were computed on the data to determine whether significant differences exist between the specified variables. The .05 level of confidence was utilized as the basis upon which the hypotheses were accepted or rejected.

HYPOTHESIS # 10 At the initial testing period there will be significant differences in oral language receptive vocabulary between the girls and boys.

A classification of the oral language data by the secondary sex variable is presented in table IV.22.

TABLE IV.22

Means, Medians, and Standard Deviations of Oral Language Scores of the Girls and Boys at the Initial Testing Period

Group	Mean	Median	SD
Girls	63.7	65.3	14.9
Boys	64.4	63.3	15.5

An F test (table IV.23) computed on the data revealed that the variance between the boys and girls was less than the variance within the two groups. The hypothesis was rejected.

TABLE IV.23

Analysis of Variance for the Relationship Between Oral Language Scores of the Girls and Boys at the Initial Testing Period

Source of Variance	Sum of Squares	df	Mean Square	F	p
between groups	11.48	1	11.48	.05	NS
within groups	23365.24	102	229.07		
Total	23376.72	103			

HYPOTHESIS # 11 At the final testing period there will be significant differences in oral language receptive vocabulary between the girls and boys.

A classification of the oral language data by the secondary sex variable is presented in table IV.24. The difference between the girls' mean and median indicate that the majority of the girls scored 4.9% higher than the mean.

TABLE IV.24

Means, Medians, and Standard Deviations of Oral Language Scores of the Girls and Boys at the Final Testing Period

Group	Mean	Median	SD
Girls	73.0	78.1	14.2
Boys	72.6	74.3	13.8

Results of an F test (table IV.25) computed on the data revealed that the variance between the boys and girls was less than the variance within the two groups. The hypothesis was rejected.

TABLE IV.25

Analysis of Variance for the Relationship Between Oral Language Scores of the Girls and Boys at the Final Testing Period

Source of Variance	Sum of Squares	df	Mean Square	F	p
between groups	3.24	1	3.24	.02	NS
within groups	19747.18	102	193.60		
Total	19750.42	103			

HYPOTHESIS # 12 There will be significant differences in oral language receptive vocabulary gain socres between the girls and boys.

Table IV.26 presents the data concerning oral language gain of the girls and boys throughout the six month instructional period.

TABLE IV.26

Means, Medians, and Standard Deviations of Oral Language Gain Scores of the Girls and Boys

Group	Mean	Median	SD
Girls	9.2	8.5	9.2
Boys	8.2	7.6	8.1

Results of an F test (table IV.27) computed on the data revealed that the variance between the boys and girls was less than the variance within the two groups. The hypothesis was rejected.

TABLE IV.27

Analysis of Variance for the Relationship Between Oral Language Gain Scores of the Girls and Boys

Source of Variance	Sum of Squares	df	Mean Square	F	p
between groups	26.95	1	26.95	.36	NS
within groups	7571.86	102	74.23		
Total	7598.81	103			

HYPOTHESIS # 13 At the initial testing period there will be significant differences in concepts about print between the girls and boys.

A classification of the concepts about print data by the secondary sex variable is presented in table IV.28.

TABLE IV.28

Means, Medians, and Standard Deviations of Concepts about Print Scores of the Girls and Boys at the Initial Testing Period

Group	Mean	Median	SD
Girls	40.0	41.7	18.9
Boys	32.7	25.0	19.3

A large difference was found between the boys' mean and median suggesting that the majority of the boys scored 7.7% below the mean.

Results from an F test (table IV.29) computed on the data revealed that the variance between the boys and girls was not significantly greater than the variance within the two groups. The hypothesis was rejected.

TABLE IV.29

Analysis of Variance for the Relationship Between Concepts about Print Scores of the Girls and Boys at the Initial Testing Period

Source of Variance	Sum of Squares	df	Mean Square	F	p
between groups	1400.89	I	1400.89	3.87	NS
within groups	36919.67	102	361.96		
Total	38320.56	103			

HYPOTHESIS # 14 At the final testing period there will be significant differences in concepts about print between the girls and boys.

The concepts about print results as categorized by the secondary sex variable are presented in table IV.30.

TABLE IV.30

Means, Medians, and Standard Deviations of Concepts about Print Scores of the Girls and Boys at the Final Testing Period

Group	Mean	Median	SD
Girls	66.0	66.7	13.3
Boys	57.6	62.5	21.7

The median of the boys' scores indicate that the majority of the boys scored 4.9% or more higher than the mean. A smaller number of low scores are assumed to be responsible for the lower mean. The high standard deviation supports this and suggests a wider range of scores for the boys around their mean than for the girls.

Results of an F test (table IV.31) computed on the data revealed that the variance between the boys and girls was significantly greater ($p < .025$) than the variance within the two groups. The hypothesis was accepted.

TABLE IV.31

Analysis of Variance for the Relationship Between Concepts about Print Scores of the Girls and Boys at the Final Testing Period

Source of Variance	Sum of Squares	df	Mean Square	F	p
between groups	1804.16	1	1804.16	5.56	.025
within groups	33083.19	102	324.35		
Total	34887.35	103			

HYPOTHESIS # 15 There will be significant differences in concepts about print gain scores between the girls and boys.

The concepts about print gain scores as categorized by the secondary sex variable are presented in table IV.32.

TABLE IV.32

Means, Medians, and Standard Deviations of Concepts about Print Gain Scores of the Girls and Boys

Group	Mean	Median	SD
Girls	25.9	25.0	12.7
Boys	24.9	25.0	13.0

Results of an F test (table IV.33) computed on the data revealed that the variance between the boys and girls was less than the variance within the two groups. The hypothesis was rejected.

TABLE IV.33

Analysis of Variance for the Relationship Between Concepts about Print Gain Scores for the Girls and Boys

Source of Variance	Sum of Squares	df	Mean Square	F	p
between groups	25.52	1	25.52	.16	NS
within groups	16693.75	102	163.66		
Total	16719.27	103			

Discussion

There were no significant differences in oral language on the basis of sex at either testing period, contrary to the literature review which cited evidence of girls' superiority in oral language. The receptive vocabulary variable of oral language, therefore, did not confirm the theory of sex differences in oral language learning. The differences in gain scores of oral language on the basis of sex were negligible.

Large differences were found in concepts about print on the basis of sex at both testing periods. Girls

demonstrated greater awareness of printed language at the early part of the kindergarten year than did the boys. They exhibited significantly greater awareness at the end of the kindergarten year. It may be generalized, therefore, that girls enter kindergarten with more understanding of print than boys and that this early advantage is related to significant differences in knowledge about print at the end of the kindergarten year. The difference in gain scores of concepts about print on the basis of sex was low. It was sufficiently high, however, to cause the relationship of the initial period to become significant at the May/June testing period.

Analysis of the Concepts About Print Results

The percentages of correct responses for the Sand and Stones tests are presented in table IV.34. They have been grouped according to the Day and Day (1978) classification.

TABLE IV.34

Results of the Concepts about Print tests, Sand and Stones

Pattern & Item	Sand test Nov. % correct	Stones test May-June % correct
Book-Orientation Concepts		
1. Orientation of book	87.4	93.2
2. Print carries message	72.8	95.1
11. Left before right page	65.0	93.2
Print-Direction Concepts		
3. Directional (top left)	56.3	90.3
4. Directional (left to right)	55.3	90.3
5. Directional (return sweep)	53.4	88.3
6. Word by word pointing	19.4	88.3
7. First and last	47.6	67.0
9. Inverted print	23.3	70.9
16. Punctuation (.)	35.0	70.9
Letter-Word Concepts		
8. Picture inversion	72.8	87.4
19. Capital/lower case	29.1	81.5
21. One letter, two letters	92.2	91.2
22. One word, two words	48.6	57.3
23. First and last letter	39.8	63.1
24. Capitol letter	25.2	56.3
Advanced-Print Concepts		
10. Inverted line sequence	5.8	13.6
12. Incorrect word sequence	15.5	68.9
13. Incorrect letter order	-	15.5
14. Incorrect letter order	-	2.9
15. Punctuation (?)	20.4	48.5
17. Punctuation (,)	-	1.9
18. Punctuation (")	-	9.7
20. Reversible words (was, no)	5.8	34.9

It may be observed that the majority of children showed an understanding of all three book orientation concepts early in the kindergarten year. Approximately half of the children understood the print-direction and letter-word concepts while showing, however, large fluctuations between the individual test items, especially in the letter-word concepts group. Very few children had mastered the advanced print concepts at the November testing period.

Throughout the six month instructional period, gains were made in all patterns. The greatest gain was seen in the print-direction concepts with 80.9% of the children showing mastery of the pattern by May of the kindergarten year. Table IV.35 presents the results of each pattern at both testing periods and their subsequent gains.

TABLE IV.35

Results and Gains of the Print Concept Patterns

Pattern	% Correct Nov.	May	Gain
Book-orientation concepts	75.1	93.9	18.8
Print-direction concepts	41.5	80.9	39.4
Letter-word concepts	51.3	72.8	21.5
Advanced-print concepts	5.9	24.5	18.6

The specific items showing the greatest gain were word-by-word pointing (68.9%), reading of inverted print (47.6%), differentiation of capital and lower case letters (52.4%), and recognition of incorrect word order when read

orally to the child (53.4%). Large gains were also made in the directional items of beginning at the top left (34%), progressing from left-to-right (35%), continuing by a return sweep (35%), understanding and/or recognition of the period (35.9%), and recognition of capital letters (31.1%).

It was found that by the end of the kindergarten only 24.5% of the students showed success with the advanced print concepts. This compares favourably with the Day and Day (1978) results in which the advanced print concepts showed 4.5% success at the February/March testing period and 11.625% success in September of grade one.

As in the Day and Day study, it was found that the children acquired the concept patterns in the following order:

1. Book-orientation concepts
2. Print-direction concepts
3. Letter-word concepts
4. Advanced-print concepts

In comparing the results of this study with the results of the Day and Day study, the differences in sample, testing instruments, and testing periods must be observed. Day and Day studied 56 kindergarten children in Texas at three points during the kindergarten year (November/December, January, and February/March), and in September of their grade one year using the Sand test at each period. The average age of the

children at the first testing period was 68.6 months. This investigation studied 103 children at two points during their kindergarten year (Nov. and May-June) using the Sand test at the initial period and the Stones test at the final period. The average age of the children at the first testing period was 64.0 months.

Although the children in this study were approximately 4.6 months younger than those in the Texas study, they showed a slightly higher average score in Nov. of their kindergarten year. Their average score in the May period was also slightly above the Texas group's average score in Sept. of their grade one year. Table IV.36 shows a breakdown of the average number of Sand and Stones items answered correctly by the two study groups during the five testing periods.

TABLE IV.36

Comparison of Average Concepts about Print Scores of the Day and Day (1978) study and the Present Study

	Nov.	Jan.	Feb.-Mar.	May-June	Sept.
Day & Day study	7.7	8.9	10.8	-	13.0
Present study	8.7	-	-	14.8	-

The complete table of the results of the Day and Day study (1978) and the present study is presented in Appendix D.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary of the Study

This study investigated the relationship between knowledge of receptive language in the oral and printed forms. Kindergarten children's facility with both forms was tested in November and May of the school year. The Peabody Picture Vocabulary Test, Revised Edition (1981) was used to measure the oral receptive vocabulary. Clay's Sand (1972b) and Stones (1979b) tests were used to measure the knowledge of written language referred to in the study as concepts about print. Descriptive statistics and histograms of the major variables are presented in Appendix C. The tests were given individually in interview sessions which lasted an average of fifteen minutes.

The 103 subjects in the sample were randomly chosen from five schools in the Corner Brook area. Minimum age requirements for the grade level, absence of any obvious physical or mental handicap, and no previous experience in kindergarten were the only selection criteria used. Owing to the nature of minimum age requirements, there was an age range of 12 months among the children in the sample. A wide diversity of socioeconomic status,

educational background of families, and preschool learning experiences were assumed to be present throughout the sample. The study lacked cultural or racial diversity which limited generalization of its results in this direction.

There was a six month instructional term between the initial and final testing periods, during which the prescribed kindergarten programs were conducted. The teachers were not informed of the specific nature of the study so that deliberate teaching of test items would be prevented. The investigator administered the tests to the total sample for both testing periods.

The relationships of secondary variables, school entrance age and sex, with the independent variables were also investigated. To examine the school entrance age factor, the children were classified into twelve groups according to the month of their birth. For purposes of statistical computations, the data relevant to the twelve classifications was further categorized into the following three groups:

Group A: data concerning the older children whose birthdates occur in the months from January through Ap[redacted]

Group B: data concerning the children whose birthdates occur in the months from May through August

Group C: data concerning the younger children whose birthdates occur in the months from September through December

Summary of Findings

A moderately strong correlation was found between the two major variables, oral language receptive vocabulary and concepts about print, for both testing periods during the school year. The correlation coefficient remained approximately the same throughout the study. No correlation between the major variable gain scores was found, however, indicating irregularities in gain within the whole group. One such anomaly was found between the boys' and girls' correlations. A .150 difference in correlation of the two groups was found from November to May favouring the girls.

Oral language receptive vocabulary was seen to be signigicantly more affected by the school entrance age variable than was the sex variable. Significant differences were found in oral language scores among the three age groups at the initial testing period. These differences were more pronounced at the final testing period. Although there were differences noted in the concepts about print scores of the school entrance age groups at the initial period, they were not significant at this

time. They were seen to be lower at the final period. Whereas differences in oral language of the age groups increased throughout the study, those in concepts about print decreased. The gain scores of the two major variables showed no significant differences on the basis of school entrance age. It is assumed, therefore, that the gains were fairly evenly distributed throughout the age groups.

Concepts about print was seen to be significantly more affected by the sex variable than the oral language. Although the differences in print concepts were not significant at the initial testing period, they were at the final period in May. At both times, however, the boys showed larger differences between mean and median than the girls. At both periods for the girls the difference between mean and median was less than 1%. Whereas the majority of the boys scored 7.7% below the mean in Nov., the majority scored 4.9% above the mean in May. It is therefore assumed that early in the kindergarten year most of the boys exhibited very little awareness of print concepts and a minority of high scores increased the mean to a higher level than the median. Later in the kindergarten year most of the boys had higher scores than the mean and a minority of low scores decreased the mean to a lower level than the median.

Differences in oral language on the basis of sex were not significant at either testing time and showed a decrease at the final period. Whereas differences in concepts about print of the boys and girls increased throughout the study, those in oral language decreased. Gain scores of the two major variables showed negligible differences on the basis of sex. This indicates that gains in oral language and print concepts were evenly distributed throughout the groups of boys and girls.

In a comparison of this study's concepts about print scores with those found in the Day and Day (1978) study, agreement was determined in the sequence of acquisition of concept patterns as follows:

(1) Book-Orientation Concepts

(2) Print-Direction Concepts

(3) Letter-Word Concepts

(4) Advanced-Print Concepts

Both studies found significant differences in concepts about print on the basis of sex, with the girls scoring higher than the boys. Age did not result in significant differences in test scores for either study.

Day and Day concluded that mastery of all the concepts was not a prerequisite for reading and that many of the advanced print concepts could be acquired during the learning to read process. Although this study

did not objectively measure reading achievement, it was noted that many of the children were reading at the latter part of the kindergarten year even though they were not successful with the advanced-print concepts. It is assumed, therefore, that this study agrees with the Day and Day conclusion.

It is noted that although the children in this study were approximately 4.6 months younger than those in the Texas study, they achieved higher scores in Nov., and higher scores in May-June than the Texas children achieved at the beginning of their grade one year. These differences, although consistent, were not significant.

Conclusions and Discussion

It may be generalized for the Corner Brook area that girls enter kindergarten with more awareness of print concepts than boys. This may be due to differences in preschool experiences as is suggested by Hiebert (1980). The tendency for these differences in print concepts to become stronger throughout the kindergarten year may indicate that girls are better able to cope with instruction and gain more from it as a result of this early awareness. Research has drawn attention to the confusions that children have with terminology (Blachowicz, 1978; Downing, 1976; Robeck, 1982; Robeck & Wiseman, 1980).

It is possible that girls clarify the distinctions among the various terminology earlier and therefore benefit more from instruction than boys.

The statistics of this study indicate that older children enter kindergarten with more proficiency in oral language. This difference may be due to the greater time that they have been exposed to and have practised language. The tendency for this difference in oral language to become stronger throughout the school year may indicate that older children are perceived to be more advanced in various language skills and are given higher expectations to fulfill than the younger children.

It is assumed from the above generalizations that the older girls entering kindergarten begin school with both advantages of greater awareness of print concepts and greater oral language proficiency. Throughout the kindergarten year these advantages become stronger and allow this group to become the highest achievers in both major variables.

Fairly strong correlations were found between the oral language and print concept variables. They indicate that approximately one half of the variance is related between the two variables.

Negative correlations were found between oral language gains and oral language scores at the initial period,

and print concept gains and print concept scores at the initial period, -0.422 and -0.399 respectively. This indicates that the children with lower scores in each of the major variables at the initial period were related to higher gains throughout the study. These relationships were not strong, however, and do not allow for generalizations.

A large difference is noted between the boys' correlation between print concept gains and print concept scores at the initial period, $r = -0.142$, and that of the girls, $r = -0.714$. The girls who entered kindergarten with lower print awareness made more gains than those who entered with greater print awareness. This may be due to the nature of Clay's concepts about print tests. Although the scores in both variables were changed to percentages for statistical testing, there was a great difference in ranges of possible raw scores of the testing instruments. The Peabody Picture Vocabulary Test has a wide range of possible scores, with 175 test items. The Sand and Stones tests have a much narrower range with only 24 items, 8 of which are categorized as advanced print concepts and are not usually mastered during the kindergarten year. The girls who entered kindergarten with high print awareness scores may not have had as much room for improvement within the scope of the testing

instruments as did the girls who entered with lower print awareness scores. This anomaly was not evident for the boys, as the boys entered kindergarten with lower print awareness scores than did the girls.

This study supports the Smith and Tager-Flusberg (1980) research in its conclusion of the interrelatedness of language comprehension and metalinguistic awareness. Whereas Smith and Tager-Flusberg correlated vocabulary and sentence comprehension with oral metalinguistic measures, this study correlated vocabulary comprehension with printed metalinguistic measures. Their correlation for vocabulary comprehension ($r = .75$), was slightly higher than the correlation computed in this study ($r = .687$ and $.650$).

This study did not support the use of gain scores as indicators of achievement for school entrance age groups, as maintained by Green and Simmons (1962), and Gredler (1978). Differences in gain scores between the school entrance age groups, and the boys and girls were very low ($F = .00, .74, .36, .16$).

Oral language receptive vocabulary results did not support the theory of girls' superiority in oral language learning at the lower grade levels. The differences at both testing periods and differences in gain scores were negligible, $F = .05, .02,$ and $.36$ respectively.

Recommendations

The higher scores of girls in print concepts merit further investigation. The specific factors which may have contributed to the girls' advantage are worthy of study. The implication of the results of such study would be to provide compensatory experiences to the boys in kindergarten and to encourage parents to provide these experiences for their other preschool male children.

Owing to the restricted nature of the Sand and Stones tests the results obtained in the study may not reflect the true gains in print awareness experienced by most children in the kindergarten year. This is especially true of the girls who started kindergarten with high print awareness scores. A testing instrument with a wider scope may indicate further developmental trends not evident in this study.

The underlying reason for studying these variables is to study and improve the reading achievement of children. Because the advanced print concepts were not mastered by most children in kindergarten, and the research in this area is usually done with kindergarten children, little information is available about the acquisition of these concepts. Testing of grade one children's concepts about print using a testing instrument with wider parameters, and measuring of corresponding reading achievement would

give information about the acquisition of these concepts and show their relationship to reading achievement.

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APPENDIX A

Letter to Parents

Milley Primary School
Corner Brook, Nfld.
September 15, 1983

Dear Parent:

Throughout this school year I will be doing some testing of approximately one-half of the kindergarten children in the Corner Brook area. This had the approval of the superintendent and your child's principal as can be seen by the signatures at the bottom of this letter. The purpose of this testing is to investigate oral language of the children and their knowledge about print. Testing of both of these factors will take place in November and again in May. Both tests will be given to the children individually during their regular school session.

These tests will not have any effect on your child, his/her placement, or instruction throughout the school year. To ensure this, the results will be kept confidential. In the writing of the final report of this investigation, the children's names will not be used. However, if at the end of the school year, you, as parents, wish to see your child's results of these tests I will set up a meeting with you to discuss them.

If you discuss this at home, would you please not let your kindergarten child hear your comments. I feel that it would be better for the children not to know about these tests until they are given because it may cause the children to build up a dread for all testing situations throughout the year. Children perform much better without this fear and nervousness.

Would you please sign this letter to give me your permission to work with your child and send it back to his/her classroom teacher. If you wish to speak to me concerning this investigation, you may call my home number (785-2951) after 6:00 pm.

I appreciate your co-operation.

Sincerely,

_____
Brenda Martin

_____
Parents' Signature

_____
Superintendent

_____
Principal

APPENDIX B

Correlation Tables

The following acronyms have been used in these tables:

OL1 - oral language receptive vocabulary scores at the initial period.

OL2 - oral language receptive vocabulary scores at the final period.

OLG - oral language receptive vocabulary gain scores.

CP1 - concepts about print scores at the initial period.

CP2 - concepts about print scores at the final period.

CPG - concepts about print gain scores.

To correctly understand the correlations involving sex and school entrance age, the values designated to each classification must be known. The boys are listed as number 1's and the girls are listed as number 2's in the raw data (Appendix E). The school entrance age variable is defined by the month of birth. It is listed in the raw data as follows:

Month of Birth	Data Classification
January	01
February	02
March	03
April	04
May	05
June	06

July	07
August	08
September	09
October	10
November	11
December	12

TABLE B.1

Pearson Product-Moment Correlations for the Whole Group

	Age	Sex	OL1	CP1	OL2	CP2	OLG
Age							
Sex	0.133						
OL1	-0.287	-0.022					
CP1	-0.213	0.191	0.687				
OL2	-0.308	0.013	0.827	0.699			
CP2	-0.171	0.227	0.645	0.772	0.650		
OLG	0.006	0.060	-0.422	-0.078	0.161	-0.085	
CPG	0.075	0.039	-0.107	-0.399	-0.119	0.272	-0.004

TABLE B.2

Pearson Product-Moment Correlations for the Girls

	OL1	CP1	OL2	CP2	OLG
CP1	.688				
OL2	.802	.717			
CP2	.699	.740	.761		
OLG	-.383	-.007	.245	.041	
CPG	-.293	-.714	-.272	-.057	.054

TABLE B.3

Pearson Product-Moment Correlations for the Boys

	OL1	CP1	OL2	CP2	OLG
CP1	.718				
OL2	.852	.702			
CP2	.676	.806	.641		
OLG	-.463	-.180	.069	-.202	
CPG	-.060	-.142	.026	.472	-.069

APPENDIX C

Descriptive Statistics of Oral Language Receptive Vocabulary, and Concepts about Print at both Testing Periods and their respective Gains

TABLE C.1

Descriptive Statistics of Major Variables

Group	Mean	Median	SD	SEMean	Max	Min
OL1	64.1	64.3	15.1	1.5	100.0	28.6
OL2	72.8	77.1	13.9	1.4	100.0	38.1
OLG	8.7	8.5	8.6	0.9	31.4	-9.2
CP1	36.3	37.5	19.4	1.9	79.2	0.0
CP2	61.7	66.7	18.5	1.8	95.8	16.7
CPG	25.4	25.0	12.8	1.3	54.2	-8.3

TABLE C.2

Histogram of Oral Language at Initial Period

Middle of Interval	Number of Observations	
30	2	**
40	7	*******
50	23	**********
60	20	**********
70	25	**********
80	18	**********
90	6	******
100	2	**

TABLE C.3

Histogram of Oral Language at Final Period

Middle of Interval	Number of Observations	
40	2	**
45	3	***
50	8	********
55	7	*******
60	4	****
65	9	*********
70	6	******
75	13	*************
80	29	*****************************
85	13	*************
90	4	****
95	2	**
100	3	***

TABLE C.4

Histogram of Oral Language Gain

Middle of Interval	Number of Observations	
-10	2	**
- 5	5	*****
0	21	**********
5	20	**********
10	24	**********
15	14	**********
20	10	**********
25	5	*****
30	2	**

TABLE C.5

Histogram of Concepts about Print at Initial Period

Middle of Interval	Number of Observations	
0	3	***
10	12	**********
20	20	**********
30	16	**********
40	16	**********
50	17	**********
60	11	**********
70	5	*****
80	3	***

TABLE C.6

Histogram of Concepts about Print at Final Period

Middle of Interval	Number of Observations	
20	4	****
30	7	*******
40	9	*********
50	13	*************
60	14	**************
70	28	****************************
80	21	*********************
90	6	******
100	1	*

TABLE C.7

Histogram of Concepts about Print Gain

Middle of Interval	Number of Observations	
-10	2	**
- 5	1	*
0	1	*
5	3	***
10	5	*****
15	22	**********
20	9	*********
25	14	**********
30	11	**********
35	14	**********
40	12	**********
45	7	*******
50	1	*
55	1	*

APPENDIX D

Concepts about Print Percentage Results of the Day and Day Study (1978) and the Present Study

Pattern & Item	Sand Test Nov. Present Study	Sand Test Nov. Day & Day	Sand Test Jan. Day & Day	Sand Test Feb.-March Day & Day	Stones Test May - June Present Study	Sand Test Sept. Day & Day
Book-Orientation Concepts						
1. Orientation of book	87.4	100	98	100	93.2	100
2. Print carries message	72.8	73	90	92	95.1	98
11. Left before right page	65	78	82	82	93.2	90
Print-Direction Concepts						
3. Directional (top left)	56.3	51	59	75	90.3	82
4. Directional (left to right)	55.3	41	57	78	90.3	82
5. Directional (return sweep)	53.4	33	55	73	88.3	79
6. Word by word pointing	19.4	11	31	37	88.3	53
7. First and last	47.6	43	63	71	67	82
9. Inverted print	23.3	25	24	33	70.9	63
16. Punctuation (.)	35	24	22	33	70.9	49
Letter-Word Concepts						
8. Picture inversion	72.8	67	53	76	87.4	82
19. Capital/lower case	29.1	39	55	67	81.5	71
21. One letter, two letters	92.2	65	80	86	91.2	93
22. One word, two words	48.6	27	20	47	57.3	63
23. First and last letter	39.8	37	51	61	63.1	65
24. Capital letter	25.2	24	20	37	56.3	57

Pattern & Item	Sand Test Nov. Present Study	Sand Test Nov. Day & Day	Sand Test Jan. Day & Day	Sand Test Feb.- March Day & Day	Stones Test May - June Present Study	Sand Test Sept. Day & Day
Advanced-Print Concepts						
10. Inverted line sequence	5.8	6	2	8	13.6	18
12. Incorrect word sequence	15.5	-	2	-	68.9	2
13. Incorrect letter order	-	2	2	8	15.5	4
14. Incorrect letter order	-	-	-	2	2.9	2
15. Punctuation (?)	20.4	14	6	4	48.5	22
17. Punctuation (,)	-	-	-	-	1.9	8
18. Punctuation (")	-	-	-	-	9.7	-
20. Reversible words (was,no)	5.8	8	8	14	34.9	37

APPENDIX E

Raw Data: Sex, Age, and Percentage Scores of Oral Language, and Concepts about Print

The school entrance age variables are defined by month of birth as follows:

January	- 1	July	- 7
February	- 2	August	- 8
March	- 3	September	- 9
April	- 4	October	- 10
May	- 5	November	- 11
June	- 6	December	- 12

The sex variables are listed as follows: Boys - 1, Girls - 2

ID	AGE	SEX	OL1	OL2	OLG	CP1	CP2	CPG
001	04	1	32.653	54.286	21.6327	12.5000	16.6667	4.1667
002	09	2	71.429	95.238	23.8095	70.8333	79.1667	8.3333
003	06	1	54.082	79.048	24.9660	41.6667	50.0000	8.3333
004	02	2	69.388	72.381	2.9932	45.8333	66.6667	20.8333
005	10	2	65.306	81.905	16.5986	29.1667	66.6667	37.5000

ID	AGE	SEX	OL1	OL2	OLG	CP1	CP2	CPG
006	04	1	54.082	74.286	20.2041	12.5000	29.1667	16.6667
007	10	2	57.143	80.952	23.8095	20.8333	62.5000	41.6667
008	12	2	53.061	54.286	1.2245	33.3333	58.3333	25.0000
009	06	1	90.816	83.810	-7.0068	50.0000	70.8333	20.8333
010	12	1	88.776	98.095	9.3197	62.5000	70.8333	8.3333
011	11	2	68.367	78.095	9.7279	66.6667	75.0000	8.3333
012	11	1	68.367	79.048	10.6803	16.6667	29.1667	12.5000
013	10	2	77.551	81.905	4.3537	41.6667	75.0000	33.3333
014	09	1	94.898	85.714	-9.1837	54.1667	87.5000	33.3333
015	10	1	72.449	80.000	7.5510	45.8333	70.8333	25.0000
016	05	2	46.939	66.667	19.7279	16.6667	45.8333	29.1667
017	01	1	77.551	94.286	16.7347	50.0000	79.1667	29.1667
018	12	2	66.327	77.143	10.8163	20.8333	75.0000	54.1667
019	04	1	81.633	80.952	-0.6803	58.3333	83.3333	25.0000
020	04	1	71.429	78.095	6.6667	66.6667	83.3333	16.6667

ID	AGE	SEX	OL1	OL2	OLG	CP1	CP2	CPG
021	07	2	83.673	84.762	1.0884	62.5000	91.6667	29.1667
022	01	1	79.592	81.905	2.3129	29.1667	70.8333	41.6667
023	08	2	72.449	80.952	8.5034	41.6667	75.0000	33.3333
024	05	2	73.469	73.333	-0.1361	58.3333	75.0000	16.6667
025	01	1	82.653	85.714	3.0612	66.6667	83.3333	16.6667
026	05	2	64.286	74.286	10.0000	58.3333	75.0000	16.6667
027	10	2	68.367	78.095	9.7279	62.5000	79.1667	16.6667
028	04	2	83.673	91.429	7.7551	50.0000	83.3333	33.3333
029	11	2	48.980	50.476	1.4966	16.6667	62.5000	45.8333
030	12	2	28.571	38.095	9.5238	12.5000	41.6667	29.1667
031	03	1	5[illegible].102	60.000	4.8980	20.8333	62.5000	41.6667
032	05	2	38.776	51.429	12.6531	29.1667	45.8333	16.6667
033	04	1	74.490	83.810	9.3197	41.6667	75.0000	33.3333
034	02	2	76.531	82.857	6.3265	41.6667	83.3333	41.6667
035	07	1	65.306	75.238	9.9320	37.5000	70.8333	33.3333

ID	AGE	SEX	OL1	OL2	OLG	CP1	CP2	CPG
036	02	2	61.224	81.905	20.6803	54.1667	79.1667	25.0000
037	02	1	86.735	85.714	-1.0204	50.0000	83.3333	33.3333
038	04	1	77.551	80.952	3.4014	58.3333	91.6667	33.3333
039	11	1	80.612	76.190	-4.4218	50.0000	66.6667	16.6667
040	01	2	68.367	90.476	22.1088	75.0000	70.8333	-4.1667
041	08	1	79.592	91.429	11.8367	62.5000	79.1667	16.6667
042	04	2	63.265	80.000	16.7347	41.6667	66.6667	25.0000
043	04	2	64.286	80.952	16.6667	50.0000	66.6667	16.6667
044	05	1	79.592	85.714	6.1225	79.1667	95.8333	16.6667
045	09	1	53.061	64.762	11.7007	20.8333	62.5000	41.6667
046	10	1	58.163	60.952	2.7891	12.5000	29.1667	16.6667
047	07	1	53.061	64.762	11.7007	16.6667	41.6667	25.0000
048	12	1	60.204	81.905	21.7007	29.1667	50.0000	20.8333
049	10	2	50.000	51.429	1.4286	20.8333	54.1667	33.3333

ID	AGE	SEX	OL1	OL2	OLG	CP1	CP2	CPG
050	08	2	48.980	73.333	24.3537	50.0000	62.5000	12.5000
051	07	1	51.020	54.286	3.2653	33.3333	58.3333	25.0000
052	02	2	65.306	82.857	17.5510	41.6667	70.8333	29.1667
053	12	1	67.347	80.952	13.6054	20.8333	66.6667	45.8333
054	04	2	98.980	100.000	1.0204	75.0000	66.6667	-8.3333
055	04	2	80.612	85.714	5.1020	50.0000	75.0000	25.0000
056	01	1	76.531	74.286	-2.2449	25.0000	16.6667	-8.3333
057	04	2	79.592	80.000	0.4082	62.5000	66.6667	4.1667
058	06	1	45.918	51.429	5.5102	00.0000	16.6667	16.6667
059	12	2	60.204	64.762	4.5578	50.0000	58.3333	8.3333
060	05	1	71.429	78.095	6.6667	20.8333	50.0000	29.1667
061	03	1	69.388	81.905	12.5170	54.1667	91.6667	37.5000
062	06	1	59.163	60.952	2.7891	25.0000	25.0000	00.0000
063	01	1	100.000	98.095	-1.9048	66.6667	87.5000	20.8333
064	01	1	63.265	73.333	10.0680	33.3333	70.8333	37.5000
065	11	2	89.796	81.905	-7.8912	54.1667	70.8333	16.6667

ID	AGE	SEX	OL1	OL2	OLG	CP1	CP2	CPG
066	12	2	42.857	43.810	0.9524	20.8333	41.6667	20.8333
067	02	1	54.082	66.667	12.5850	20.8333	62.5000	41.6667
068	02	1	71.429	65.714	-5.7413	12.5000	37.5000	25.0000
069	12	2	38.776	51.429	12.6531	12.5000	58.3333	45.3333
070	10	1	59.184	78.095	18.9116	37.5000	54.1667	16.6667
071	12	1	55.102	72.381	17.2789	41.6667	62.5000	20.8333
072	09	1	50.000	60.952	10.9524	12.5000	41.6667	29.1667
073	06	1	86.735	88.571	1.8367	62.5000	79.1667	16.6667
074	10	1	45.918	45.714	-0.2041	25.0000	45.8333	20.8333
075	04	1	46.939	56.190	9.2517	12.5000	25.0000	12.5000
076	11	1	63.265	68.571	5.3061	16.6667	50.0000	33.3333
077	05	1	66.327	80.000	13.6735	16.6667	66.6667	50.0000
078	12	2	66.327	78.095	11.7687	41.6667	70.8333	29.1667
079	12	2	53.061	63.810	10.7483	4.1667	50.0000	45.8333
080	06	1	59.184	71.429	12.2449	54.1667	70.8333	16.6667

ID	AGE	SEX	OL1	OL2	OLG	CP1	CP2	CPG
081	10	2	67.347	68.571	1.2245	62.5000	87.5000	25.0000
082	05	1	66.327	73.333	7.0068	41.6667	75.0000	33.3333
083	01	2	53.061	73.333	20.2721	33.3333	66.6667	33.3333
084	04	2	70.408	81.905	11.4966	25.0000	70.8333	45.8333
085	12	1	56.122	55.238	-0.8843	16.6667	58.3333	41.6667
086	11	2	48.980	68.571	19.5918	37.5000	66.6667	29.1667
087	06	2	82.653	83.810	1.1565	41.6667	66.6667	25.0000
088	05	2	37.755	48.571	10.8163	8.3333	33.3333	25.0000
089	08	2	53.061	55.238	2.1769	8.3333	41.6667	33.3333
090	11	1	38.776	41.905	3.1293	16.6667	20.8333	4.1667
091	09	1	42.857	74.286	31.4286	12.5000	29.1667	16.6667
092	02	2	67.347	80.000	12.6531	33.3333	62.5000	29.1667
093	11	1	46.939	48.571	1.6327	8.3333	54.1667	45.8333
094	12	2	55.102	83.810	28.7075	45.8333	70.8333	25.0000
095	11	2	83.673	79.048	-4.6258	41.6667	66.6667	25.0000

ID	AGE	SEX	OL1	OL2	OLG	CP1	CP2	CPG
096	10	2	51.020	78.095	27.0748	37.5000	66.6667	29.1667
097	09	1	36.735	44.762	8.0272	16.6667	37.5000	20.8333
098	04	2	50.000	48.571	-1.4286	4.1667	41.6667	37.5000
099	10	2	61.224	56.190	-5.0340	33.3333	54.1667	20.8333
100	04	1	52.041	66.667	14.6259	25.0000	70.8333	45.8333
101	05	1	78.571	85.714	7.1429	20.8333	58.3333	37.5000
102	11	1	57.143	62.857	5.7143	20.8333	54.1667	33.3333
103	08	1	61.224	77.143	15.9184	25.0000	41.6667	16.6667